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### **THE NORMALIZED CUMULATIVE BLACKBODY FUNCTIONS, THEIR APPLICATIONS IN THERMAL RADIATION CALCULATIONS, AND RELATED SUBJECTS**

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AND RELATED SUBJECTS**

**BY**

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## Foreword

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### Abstract

Rapid calculation of the radiant power and quantum flux emitted by a blackbody source involving any wavelength interval is made possible by the derivations in this paper which introduces the "normalized cumulative blackbody functions" formulated by the author. Thus, in contrast to conventional blackbody tables, all different radiation temperatures and any wavelength interval are covered by one function which can be compiled in one simple table of very modest volume. The final expressions using these cumulative blackbody functions are uncomplicated equations which can be solved by slide rule operations or, for higher accuracy, by using a desk calculator. Further, the paper introduces an unambiguous symbolism for expressing power and quantum flux radiated by a blackbody source and for expressing performance factors such as conversion yields of broadband radiation detectors. Also equations for calculating the difference in power and quantum flux for blackbody sources against a blackbody background are derived. Illustrative examples for typical situations are calculated.

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## **I. INTRODUCTION**

Since processes involving radiation are quantized, that is, energy is emitted, absorbed, and converted by discrete amounts, no matter what spectral region is involved, the ultimate limitations on detection are determined by unavoidable statistical variations in the number of quanta emitted and absorbed and in the number of new primary species caused by the conversion process of the detector. An information signal transmitted by radiation, in order to be detectable, must constitute a temporal or spatial deviation in the number of quanta which overcome sufficiently the statistical fluctuations introduced by the occurring processes. One must realize that, even when assuming an ideal nonfluctuating source (ideal coherence) and ideal energy conversion, in practice the attenuation by absorption in the transmission path will introduce statistical fluctuations.<sup>1</sup> When using the conventional photometric and radiation units, one can easily overlook the limitation in detection as imposed by the statistical variations of the number of quanta which must be considered for threshold conditions. Therefore, to have a unit system for light intensities, etc., which in itself expresses the discrete number of quanta involved would constitute a considerable convenience for threshold detection calculations. However, since one usually deals with illumination with a broad spectral distribution rather than with monochromatic illumination, a useful system must indicate not only the number of quanta involved, but also the spectral distribution. In the field of thermal and visible radiation detection, where one deals mainly with blackbody radiation distributions, the system can be made useful and unambiguous by stating the wavelength boundaries between which the number of quanta are counted and by identifying the radiation distribution within these boundaries with a temperature, called "radiation temperature". This temperature is equivalent to the temperature of an ideal blackbody source that would furnish radiation with such a distribution. Similarly, then, for attenuators, converters, detectors, etc. one should state in addition to the transmission factors, conversion factors, etc. the radiation temperature and spectral boundaries for which the performance factors are valid. Evidently, the radiation temperature of the source and the temperatures valid for the data concerning the attenuator, etc., as well as their spectral regions must be identical for finding the output of the involved elements by simple multiplication of their performance factors

by the power or quantum flux incident on the elements. Here, the term "radiation temperature" is used rather than the term "color temperature" used in photometry, because the word "color" should be restricted to visible radiation as detected by a three-detector arrangement having the human tri-stimulus response.<sup>2</sup> In the absence of such a quantized unit system for radiation, one should at least have convenient expressions which allow rapid calculation of the power and quantum flux occurring for the different situations. It is thus the purpose of this paper to derive equations and to provide suitable procedures for achieving these rapid calculations and thus making convenient the finding of numerical blackbody values for any situation possible. This is mainly achieved by introducing the "normalized cumulative blackbody radiation function" formulated by the author, which can be used with appropriate expressions to compute radiant power and quantum flux emitted by a blackbody source of any given temperature and for any spectral interval. Furthermore, as will be shown in some of the examples of this paper, the radiation temperature and the spectral range considered will be introduced for radiation data and performance factors by indicating this data above and below the dimension respectively, i.e.,

$$\begin{array}{c} 300^{\circ}\text{K} \\ \text{Quanta m}^{-2} \cdot \\ 3.4\mu\text{m to } 4\mu\text{m} \end{array}$$

This will avoid ambiguity and assure that corresponding radiation and element performance data are multiplied by each other for finding the element output values. Then, by use of the expressions and tables of this paper in connection with suitable optical equations and performance factors (identified as stated above), the limitations in the detection of thermal radiation, which are of special interest in thermal image detection, may be obtained by relatively uncomplicated calculations for any situation.

For the sake of clarity the derivations will commence with well-known equations, leading to final expressions which can be easily evaluated by slide rule operations or, for higher accuracy, by using a desk calculator.

## II. Derivation of Normalized Blackbody Functions for Spectral Radiance and Spectral Quantum Flux

A solid at any temperature  $T$  above  $0^{\circ}\text{K}$ , emits radiation with a continuous

spectrum having an intensity  $I_e(\lambda, T)$  with a distribution as governed by Kirchoff's law of radiation,<sup>3</sup> i.e

$$I_e(\lambda, T) = I(\lambda, T) n_a(\lambda, T), \quad (1)$$

where  $I(\lambda, T)$  represents the spectral intensity distribution governed by Planck's law of radiation and  $n_a(\lambda, T)$  is the spectral absorption factor for radiation incident to the surface of the solid. Obviously, for given temperatures  $I_e(\lambda, T)$  reaches its maximum values for  $n_a(\lambda, T) = \text{const} = 1$ , which by definition is attributed to the so-called "blackbody", since an "ideal black surface" of a body absorbs all incident radiation.

The "spectral radiant emittance" (radiant flux per unit of area per unit of bandwidth, where radiant flux = radiant energy per unit of time = radiant power)  $N^*(\lambda, T)$  in  $\text{W m}^{-3}$  of a blackbody surface as given by Planck's law of radiation<sup>3,4</sup> is expressed by the well-known equation.

$$N^*(\lambda, T) = \frac{c_1}{\lambda^5 (e^{c_2/\lambda T} - 1)} = \frac{3.7405 \times 10^{-16}}{\lambda^5 (e^{1.43879 \times 10^{-2}/\lambda T} - 1)}. \quad (2)$$

Since an ideal blackbody, by definition, is a perfectly diffuse radiator, i.e. the "radiance" (radiant flux per unit projected area per unit solid angle) is constant in all directions, Lambert's cosine law applies. Thus, one finds by integration that

$$N^*(\lambda, T) = N_0(\lambda, T) \int_0^{\pi/2} 2\pi \sin(\theta) \cos(\theta) d(\theta) = \pi N_0(\lambda, T), \quad (3)$$

where  $\theta$  is the angle between the direction of propagation and the normal to the emitting surface and  $N_0(\lambda, T)$  is the "spectral radiance" (radiant flux per unit projected area per unit solid angle per unit bandwidth) in  $\text{W m}^{-3} \text{sr}^{-1}$ . Thus, from Eqs. (2) and (3),

$$N_0(\lambda, T) = \frac{N^*(\lambda, T)}{\pi} = \frac{1.1906 \times 10^{-16}}{\lambda^5 (e^{1.43879 \times 10^{-2}/\lambda T} - 1)} = \frac{1.1906 \times 10^{-16}}{\lambda^5 (10^{6.24859 \times 10^{-3}/\lambda T} - 1)}. \quad (4)$$

Integrating Eq. (2) from  $\lambda=0$  to  $\lambda=\infty$  will yield the "radiant emittance" (radiant flux per unit of area)  $N_p^*$  in  $\text{W m}^{-2}$  of a blackbody and summed over all wavelengths, as given by the Stefan-Boltzmann law,<sup>3,4</sup> i.e.

$$N_p^*(T) = 5.6697 \times 10^{-8} T^4. \quad (5)$$

Again, dividing Eq. (5) by  $\pi$  and using Eq. (3) one obtains the radiance  $N_p(T)$  in  $W m^{-2} sr^{-1}$  of a blackbody surface. Thus,

$$N_p(T) = \frac{N_p^*}{\pi} = 1.8047 \times 10^{-8} T^4 \sim 1.805 \times 10^{-8} T^4. \quad (6)$$

Differentiation of Eq. (2) yields the wavelength  $\lambda_{opt}$  in meters at which a blackbody radiation has its peak intensity, as given by Wien's displacement law:<sup>3,4</sup>

$$\lambda_{opt}(T) = 2.8978 \times 10^{-3} T^{-1}. \quad (7)$$

Replacing  $\lambda$  in Eq. (4) by  $\lambda_{opt}$  of Eq. (7) yields the maximum value of the spectral radiance  $N_{0,\lambda_{opt}}(T)$  in  $W m^{-3} sr^{-1}$  emitted by a blackbody. Hence

$$N_{0,\lambda_{opt}}(T) = \frac{c_1 T^5}{\pi (2.8978 \times 10^{-3})^5 (e^{c_2/2.8978 \times 10^{-3}} - 1)} = 4.0941 \times 10^{-6} T^5. \quad (8)$$

Forming the ratio of  $N_0(\lambda, T)$  and  $N_{0,\lambda_{opt}}(T)$  for their values as defined by Eq. (4), one obtains

$$\eta_R^*(\lambda, T) = \frac{N_0(\lambda, T)}{N_{0,\lambda_{opt}}(T)} = \frac{\lambda_{opt}^5 (e^{c_2/T\lambda_{opt}} - 1)}{\lambda^5 (e^{c_2/T\lambda} - 1)}. \quad (9)$$

Using Eq. (7) in the exponent in the numerator of Eq (9) for  $\lambda_{opt}$ , and in the denominator for  $T$  yields

$$\eta_R^*(\lambda, \lambda_{opt}) = \left( \frac{\lambda_{opt}}{\lambda} \right)^5 \frac{(e^{c_2/2.8978 \times 10^{-3}} - 1)}{(e^{c_2/2.8978 \times 10^{-3} \lambda/\lambda_{opt}} - 1)}. \quad (10)$$

Letting

$$\lambda/\lambda_{opt} = \lambda_n, \quad (11)$$

where  $\lambda_n$  will be called the "normalized blackbody wavelength", which obviously is dimensionless, and by replacing the constants by their numerical values, Eq. (10) may be rewritten and is introduced as the "normalized blackbody spectral radiance function",  $\eta_R(\lambda_n)$ . Thus,

$$\eta_R(\lambda_n) = \frac{1.42325 \times 10^2}{\lambda_n^5 (e^{4.96511/\lambda_n} - 1)} = \frac{1.42325 \times 10^2}{\lambda_n^5 (10^{2.15632/\lambda_n} - 1)}. \quad (12)$$

Fig. 1 and Table 1 show the normalized blackbody spectral radiance function of Eq. (12), which evidently, for any temperature, represents the ratio of the blackbody spectral radiance occurring at  $\lambda = \lambda_n \lambda_{opt}$  to that occurring at  $\lambda_{opt}$ . Combining Eqs. (7) and (11) yields for

$$\lambda_n(\lambda, T) = 3.450894 \times 10^2 \lambda T. \quad (13)$$

Multiplying Eq. (8) by  $\eta_R(\lambda_n)$  yields the blackbody spectral radiance  $N_0(\lambda, T)$  in  $\text{W m}^{-3} \text{sr}^{-1}$ . Hence

$$N_0(\lambda, T) = 4.0941 \times 10^{-6} T^5 \eta_R(\lambda_n). \quad (14)$$

This equation, in connection with Eq. (13) and Table 1, then permits convenient and rapid calculation of the spectral radiance obtained from any blackbody surface, as shown in the following example.

#### Example 1.

A blackbody has a temperature of 300 °K. Using Eq. (7), the maximum of the radiation is found to be at

$$\lambda_{opt} = \frac{2.8978 \times 10^{-3}}{300} = 9.6593 \times 10^{-6} \text{ m}.$$

The radiance  $N_p$  (summed over all wavelengths) is given by Eq. (6) with

$$N_p = 1.805 \times 10^{-8} \times 300^4 = 1.46 \times 10^2 \text{ W m}^{-2} \text{sr}^{-1}, \quad \begin{matrix} 300^\circ\text{K} \\ \lambda=0 \text{ to } \infty \end{matrix}$$

As explained in the introduction, quoting numerical values of polychromatic radiation data often has little value, if ambiguity is not avoided by also indicating the distribution of the radiation and the wavelength boundaries. An attempt is made to rectify this situation in this paper by introducing the method of writing the radiation temperature and the spectral range involved above and below the dimension, respectively, as shown in this example. For  $\lambda = 3.86 \text{ } \mu\text{m}$  (window through the atmosphere),  $\lambda_n$ , from Eq. (13), is

$$\lambda_n = 3.4509 \times 10^2 \times 3.86 \times 10^{-6} \times 300 \sim 0.4.$$

Then, from table 1,  $\eta_R = 0.0565$ , thus, from Eq. (14), for the spectral radiance

$$N_0 = 4.0941 \times 10^{-6} \times 300^5 \times 0.0565 = 5.6 \times 10^5 \frac{W}{m^2 \cdot sr} \cdot \frac{300^\circ K}{3.86 \mu m}$$

Evidently, the values obtained from Eq. (14) can be used directly for a fairly accurate calculation of the radiance, for a finite bandwidth, only if the bandwidth is appropriately small. Assuming in this example a bandwidth of  $0.1 \mu m$ , which is sufficiently small for a modest accuracy, and assuming an area of  $1 mm^2$ , one finds, by using the relationship of Eq. (3), that the radiant power  $N_F$  from this area and within the spectral interval  $3.81 \mu m$  to  $3.91 \mu m$ , is

$$N_F = \pi \times 5.6 \times 10^5 \times 10^{-7} \times 10^{-6} \sim 1.8 \times 10^{-7} \frac{W}{3.81 \mu m \text{ to } 3.91 \mu m} \cdot \frac{300^\circ K}{}$$

As stated before, for computations for thermal image detection, etc., it is important to know the number of quanta involved. Modifying  $\eta_R(\lambda_n)$  by the wavelength dependency of energy will yield a function which is usable for all radiation temperatures as a means of calculating the relevant number of quanta per pertinent units as a function of  $\lambda$ . Since the "spectral quantum radiance" (quantum flux per unit of projected area per unit solid angle per unit bandwidth)  $Q_0(\lambda, T)$  in quanta  $s^{-1} m^{-2} sr^{-1}$  of a blackbody surface is given by

$$Q_0(\lambda, T) = \frac{N_0(\lambda, T)}{E_Q(\lambda)} = \frac{N_0(\lambda, T)}{hc/\lambda}, \quad (15)$$

where  $E_Q(\lambda)$  is the quantum energy,  $h$  is Planck's constant ( $6.6256 \times 10^{-34}$  Js) and  $c$  is the velocity of light ( $2.997925 \times 10^8$  m  $s^{-1}$ ), Eqs. (9) to (12) may be used to write for  $\eta_Q^\#(\lambda_n)$ , which represents the ratio of the spectral quantum radiance at wavelength  $\lambda$  to that at  $\lambda_{opt}$ ,

$$\begin{aligned} \eta_Q^\#(\lambda_n) &= \left( \frac{N_0(\lambda, T)}{hc/\lambda} \right) / \left( \frac{N_0(\lambda_{opt}, T)}{hc/\lambda_{opt}} \right) = \frac{N_0(\lambda, T) \lambda}{N_0(\lambda_{opt}, T) \lambda_{opt}} \\ &= \eta_R(\lambda_n) \lambda_n = \lambda_n^{-4} \frac{1.42325 \times 10^2}{(e^{4.96511/\lambda_n} - 1)} \end{aligned} \quad (16)$$

However, in Eq. (16) the maximum of  $\eta_Q^\#(\lambda_n)$  is not at  $\lambda_n = 1$  as is the case for  $\eta_R(\lambda_n)$ . The peak of  $\eta_Q^\#(\lambda_n)$  can be found by differentiating Eq. (16) and equating to zero. Thus, taking  $\lambda_n = \lambda/\lambda_{opt}$  and letting the numerator in Eq. (16) be  $K_1$  and the exponent 4.96511 in the denominator be  $K_2$  one may write:

$$\frac{d\eta_Q^\#}{d\lambda} = K_1 \lambda_{opt}^4 d\{\lambda^{-4}(e^{K_2 \lambda_{opt} \lambda^{-1}} - 1)\} = 0 \quad (17)$$

$$4 - (e^{K_2 \lambda_{opt} \lambda^{-1}} - 1)^{-1} K_2 \lambda_{opt} \lambda^{-1} e^{K_2 \lambda_{opt} \lambda^{-1}} = 0$$

$$\frac{\lambda}{\lambda_{opt} K_2} = \frac{e^{K_2 \lambda_{opt} \lambda^{-1}}}{4(e^{K_2 \lambda_{opt} \lambda^{-1}} - 1)} \quad (18)$$

Letting

$$K_2 \lambda_{opt} \lambda^{-1} = \Omega, \quad (19)$$

Eq. (19) may be written as

$$\frac{1}{\Omega} = \frac{e^\Omega}{4(e^\Omega - 1)} = \frac{1}{4(1 - e^{-\Omega})} \quad (20)$$

and may be solved for  $\Omega$  by successive approximations, which yields

$$\Omega = 3.92069. \quad (21)$$

When this value and the numerical value of  $K_2$  are inserted into Eq. (19) one finds with the aid of Eq. (11) the numerical value of  $\lambda_n$  which will be referred to as  $\lambda_{n,Qmax}$  and is the normalized wavelength of the spectral peak of the number of quanta per pertinent units emitted by a blackbody surface. Thus, calling  $\lambda_{peak}$  in meters the wavelength of this spectral peak,

$$\lambda_{n,Qmax} = \frac{\lambda_{peak}}{\lambda_{opt}} = \frac{K_2}{\Omega} = \frac{4.96511}{3.92069} = 1.266387. \quad (22)$$

Solving Eq. (16) for  $\lambda_n = \lambda_{n,Qmax} = 1.26639$  yields

$$\eta_Q^\# = 1.119379. \quad (23)$$

By dividing  $\eta_Q^\#(\lambda_n)$  with this value,  $\eta_Q^\#(\lambda_n)$  may be normalized into  $\eta_Q(\lambda_n)$  which is introduced as the "normalized blackbody spectral quantum flux function"

$$\eta_Q(\lambda_n) = \frac{\eta_Q^\#(\lambda_n)}{1.119379} = \frac{1.27146 \times 10^2}{\lambda_n^4 (e^{4.96511/\lambda_n} - 1)}, \quad (24)$$

and which is depicted by the graph in Fig. 1 and shown by Table 1.

At  $\lambda_{\text{peak}}$ , the spectral quantum radiance  $Q_{0,\lambda_{\text{peak}}}(T)$  in quanta  $\text{s}^{-1} \text{m}^{-3} \text{sr}^{-1}$  as determined by Eqs. (15), (14), and (22), is given by

$$Q_{0,\lambda_{\text{peak}}}(T) = \frac{N_{0,\lambda_{\text{peak}}}(T)}{E_{0,\lambda_{\text{peak}}}} = \frac{4.0941 \times 10^{-6} T^5 \eta_{R,\lambda_n,Q_{\text{peak}}}}{1.9863 \times 10^{-25} / \lambda_{\text{peak}}} \quad (25)$$

$$= \frac{4.0941 \times 10^{-6} T^5 \eta_{R,\lambda_n,Q_{\text{max}}}}{1.9863 \times 10^{-25} / 1.26639 \lambda_{\text{opt}}} = 2.61023 \times 10^{19} \lambda_{\text{opt}} T^5 \eta_{R,\lambda_n,Q_{\text{max}}}.$$

Replacing then  $\eta_{R,\lambda_n,Q_{\text{max}}}$  by its numerical value using Eq. (12) or Table 1, and  $\lambda_{\text{opt}}$  by Eq. (7), Eq. (25) may be rewritten as

$$Q_{0,\lambda_{\text{peak}}}(T) = 2.61023 \times 10^{19} T^5 \times 0.88392 \times 2.8978 \times 10^{-3} T^{-1} = 6.68586 \times 10^{16} T^4. \quad (26)$$

Multiplying Eq. (26) by  $\eta_Q(\lambda_n)$ , because of its definition as expressed by Eqs. (16) and (24), yields the blackbody spectral quantum radiance  $Q_0(\lambda, T)$  in quanta  $\text{s}^{-1} \text{m}^{-3} \text{sr}^{-1}$ . Thus,

$$Q_0(\lambda, T) = 6.68586 \times 10^{16} T^4 \eta_Q(\lambda_n). \quad (27)$$

#### Example II.

Assuming the same given data as in Example I, and using Eq. (27) and Table I, yields, for the spectral quantum radiance,

$$Q_0 = 6.6859 \times 10^{16} \times 300^4 \times 0.020196 = 1.094 \times 10^{25} \frac{300^\circ\text{K}}{3.86\mu\text{m}} \text{ Quanta } \text{s}^{-1} \text{m}^{-3} \text{sr}^{-1}.$$

Then, again for a bandwidth of  $0.1 \mu\text{m}$  and an area of  $1 \text{mm}^2$ , by using the relationship of Eq. (3), one obtains a quantum flux

$$Q_F = \pi \times 1.1 \times 10^{25} \times 10^{-7} \times 10^{-6} = 3.4 \times 10^{12} \frac{300^\circ\text{K}}{3.81\mu\text{m} \text{ to } 3.91\mu\text{m}} \text{ Quanta } \text{s}^{-1}$$

#### III. Derivation of Normalized Cumulative Blackbody Functions for Radiant Power and Quantum Flux.

The accuracy with which the radiant power and the corresponding quantum flux can be determined by using Eqs. (14) and (27), as shown in Examples I and II, depends on the effective bandwidth, since fairly accurate results can only be obtained from a trapezoidal approximation based on the midpoint value of the appropriate interval for a rather narrow bandwidth. Thus, for broader bandwidths,

one would at least have to divide the appropriate interval into a number of sufficiently small subintervals and then obtain the effective value  $\eta_{\text{eff}}$  by forming an average from the individual center values of the  $\eta$ 's of each subinterval. Thus

$$\eta_{\text{eff}} = \frac{1}{m} (\eta_1 + \eta_2 + \eta_3 + \dots + \eta_m), \quad (28)$$

where  $m$  is the number of subintervals used. However, a more practical solution will be introduced, which consists of a modification and extension of Eqs. (14) and (27) by employing a correction factor  $\gamma$  which depends on the appropriate bandwidth interval  $\lambda_{\text{min}}$  to  $\lambda_{\text{max}}$ . When using Eqs. (14) and (27) for a situation with a finite bandwidth, i.e. without considering the effective  $\eta$ 's as dependent on the  $\Delta\lambda_n$ , the product  $\eta \times \Delta\lambda_n$  obviously differs from the effective area  $\eta_{\text{eff}} \Delta\lambda_n$  under the curve. If one determines the integral values between abscissa values from 0 to  $\lambda_n$  for  $\eta_R(\lambda_n)$  and  $\eta_Q(\lambda_n)$ , introduced as the "cumulative blackbody radiant power function"  $\eta_R^*(\lambda_n)$  and the "cumulative blackbody quantum flux function"  $\eta_Q^*(\lambda_n)$  respectively, one can find the true value of the area under the curve for any bandwidth by subtracting the one appropriate extremum value from the other. Then, the correction factor  $\gamma_R$ , evidently, is given by the ratio of the true area  $[\eta_R^*(\lambda_{\text{max}}) - \eta_R^*(\lambda_{\text{min}})]$  to the approximate area  $(\lambda_{\text{max}} - \lambda_{\text{min}})\eta_R(\lambda_n)$ , where  $\beta$  in this and later expressions stands uniformly either for R, meaning the radiance function or for Q, meaning the quantum flux function, whichever applies. Thus

$$\gamma_\beta(\lambda_n, \lambda_{\text{max}}, \lambda_{\text{min}}) = \frac{[\eta_\beta^*(\lambda_{\text{max}}) - \eta_\beta^*(\lambda_{\text{min}})]}{(\lambda_{\text{max}} - \lambda_{\text{min}})\eta_\beta(\lambda_n)} = \frac{\Delta\eta_\beta^*(\lambda_{\text{max}}, \lambda_{\text{min}})}{\Delta\lambda_n \eta_\beta(\lambda_n)}. \quad (29)$$

The "cumulative blackbody radiant power function"  $\eta_R^*(\lambda_n)$ , by using Eq. (12), is defined as

$$\eta_R^*(\lambda_n) = \int_0^{\lambda_n} \eta_R(\lambda_n) d\lambda_n = 1.423245 \int_0^{\lambda_n} \lambda_n^{-5} (e^{4.96511/\lambda_n} - 1)^{-1} d\lambda_n. \quad (30)$$

The "cumulative blackbody quantum flux function"  $\eta_Q^*(\lambda_n)$ , by using Eq. (24), is defined as

$$\eta_Q^*(\lambda_n) = \int_0^{\lambda_n} \eta_Q(\lambda_n) d\lambda_n = 1.27146 \int_0^{\lambda_n} \lambda_n^{-4} (e^{4.96511/\lambda_n} - 1)^{-1} d\lambda_n. \quad (31)$$

The above integrals, Eqs. (30) and (31), may be expressed in terms of Debye functions<sup>5</sup> and evaluated with the aid of appropriate series. Table 2 and Fig. 2 show the numerical values of the cumulative blackbody functions  $\eta_R^*(\lambda_n)$  and  $\eta_Q^*(\lambda_n)$ .

Dividing Eqs (30) and (31) by the limiting value of the cumulative functions (Table 2) will yield the "normalized cumulative blackbody radiant power function"  $\eta_R^+(\lambda_n)$  which expresses the ratio of the cumulative radiant power at  $\lambda_n$  to that at  $\lambda_n = \infty$ , i.e.

$$\eta_R^+(\lambda_n) = \frac{\eta_R^*(\lambda_n)}{1.52081} \quad (32)$$

and the "normalized cumulative blackbody quantum flux function"  $\eta_Q^+$  which expresses the ratio of the cumulative quantum flux at  $\lambda_n$  to that at  $\lambda_n = \infty$ , i.e.

$$\eta_Q^+(\lambda_n) = \frac{\eta_Q^*(\lambda_n)}{2.49666} \quad (33)$$

Table 3 and Fig 3 show the numerical values of Eqs. (32) and (33), in which Tables 3a and 3b show a condensed number of values of  $\eta_B^+(\lambda_n)$  and Table A lists not only an extensive number of values, but also the values of the difference between the listed steps, i.e.  $[\eta_B^+(\lambda_n) - \eta_B^+(\lambda_{n-1})]$ , in order to facilitate rapid interpolation. Dividing Eqs (30) and (31) with the values obtained for  $\lambda_n = 1$  will yield the cumulative blackbody peak weight factor for the radiant power,  $\eta_R^{++}$ , which expresses the fraction of the radiation in reference to the amount of radiation emitted for  $\lambda_n = 1$ , i.e.

$$\eta_R^{++}(\lambda_n) = \frac{\eta_R^*(\lambda_n)}{0.380285} \quad (35)$$

and the "cumulative blackbody peak radiation weight factor for the quantum flux",  $\eta_B^{++}(\lambda_n)$  which expresses the ratio of the cumulative amount of the quantum flux at  $\lambda_n$  to that at  $\lambda_n = 1$ , i.e.

$$\eta_Q^{++}(\lambda_n) = \frac{\eta_Q^*(\lambda_n)}{0.2659} \quad (36)$$

Table 4 and Fig. 4 show the numerical values of Eqs. (35) and (36).

Multiplying Eqs. (14) and (27), respectively, by  $\gamma_B$  as given by Eq. (29) in order to obtain for the spectral radiance  $N_{O,\gamma}(\lambda_n, T)$  in  $W m^{-3} sr^{-1}$  and

the spectral quantum radiance  $Q_{0,\gamma}(\lambda_n, T)$  in Quanta  $s^{-1} m^{-3} sr^{-1}$  correct effective values when a finite bandwidth is involved, results in

$$N_{0\gamma}(\lambda_n, T) = N_0(\lambda_n, T) \gamma_R(\lambda_n, \lambda_{nmax}, \lambda_{nmin}) = \frac{4.0941 \times 10^{-6} T^5 \Delta \eta_R^*(\lambda_{nmax}, \lambda_{nmin})}{\Delta \lambda_n} \quad (37)$$

and

$$Q_{0\gamma}(\lambda_n, T) = Q_0(\lambda_n, T) \gamma_Q(\lambda_n, \lambda_{nmax}, \lambda_{nmin}) = \frac{6.6859 \times 10^{-16} T^4 \Delta \eta_Q^*(\lambda_{nmax}, \lambda_{nmin})}{\Delta \lambda_n} \quad (38)$$

If  $\gamma_B$  of Eq. (29) is rewritten in terms of the normalized cumulative blackbody functions  $\eta_B^+$  then, by using Eqs. (32) and (33), Eqs. (37) and (38) may be rewritten as

$$N_{0\gamma}(\lambda_n, T) = \frac{6.2263 \times 10^{-6} T^5 \Delta \eta_R^+(\lambda_{nmax}, \lambda_{nmin})}{\Delta \lambda_n} \quad (39)$$

and

$$Q_{0\gamma}(\lambda_n, T) = \frac{1.669 \times 10^{-17} T^4 \Delta \eta_Q^+(\lambda_{nmax}, \lambda_{nmin})}{\Delta \lambda_n} \quad (40)$$

Since the corrected spectral values of Eqs. (37) through (40) express the effective values per unit bandwidth, it is necessary in order to obtain values for the true bandwidth (that is the values for the radiance and the quantum radiance) that these equations be multiplied by  $\Delta \lambda$ . For this operation Eq. (13) may be rewritten as

$$\Delta \lambda = 2.8978 \times 10^{-3} T^{-1} \Delta \lambda_n \quad (41)$$

and multiplied by Eq. (39), which yields the "radiance"  $N_{0,\Delta\lambda}(T)$  in  $W m^{-2} sr^{-1}$  for a given bandwidth  $\Delta \lambda$ . Thus,

$$N_{0,\Delta\lambda}(T) = 1.8043 \times 10^{-8} T^4 \Delta \eta_R^+(\lambda_{nmax}, \lambda_{nmin}). \quad (42)$$

Multiplying Eq. (40) by Eq. (41) yields the "quantum radiance"  $Q_{0,\Delta\lambda}(T)$  in Quanta  $s^{-1} m^{-2} sr^{-1}$  for a given bandwidth  $\Delta \lambda$ . Thus,

$$Q_{0,\Delta\lambda}(T) = 4.8371 \times 10^{-14} T^3 \Delta \eta_Q^+(\lambda_{nmax}, \lambda_{nmin}). \quad (43)$$

However, when the values of  $N_{O,\Delta\lambda}$  and  $Q_{O,\Delta\lambda}$  are given, Eqs. (42) and (43) cannot be solved explicitly for  $T$ , since in order to find  $\Delta\eta_{\beta}^+$  the knowledge of the value of  $T$  is required. Then  $T$  must be found by successive approximation by using Eqs. (42) and (43).

### Example III

The numerical values of the radiance and the quantum radiance of a blackbody surface with  $T = 300^\circ\text{K}$  for the wavelength interval  $3.4\ \mu\text{m}$  to  $4.0\ \mu\text{m}$  (window in the atmosphere) is needed.

From Eq. (13)

$$\lambda_{n\text{max}} = 3.45089 \times 10^2 \times 4 \times 10^{-6} \times 300 = 0.414107$$

and

$$\lambda_{n\text{min}} = 3.45089 \times 10^2 \times 3.4 \times 10^{-6} \times 300 = 0.351991.$$

Thus, by using Table 3 in connection with appropriate interpolation one finds for  $\lambda_{n\text{max}}$ , that

$$\eta_{R\text{max}}^+ = 2.13242 \times 10^{-3}$$

$$\eta_{Q\text{max}}^+ = 4.37836 \times 10^{-4}$$

and for  $\lambda_{n\text{min}}$ , that,

$$\eta_{R\text{min}}^+ = 4.02515 \times 10^{-4}$$

$$\eta_{Q\text{min}}^+ = 0.71313 \times 10^{-4},$$

Hence,  $\Delta\eta_R^+ = 1.7299 \times 10^{-3}$  and  $\Delta\eta_Q^+ = 3.66523 \times 10^{-4}$ .

Thus, from Eq. (42) the radiance

$$N_{O,\Delta\lambda} = 1.8043 \times 10^{-8} \times 300^4 \times 1.7299 \times 10^{-3} \sim 2.5 \times 10^{-1} \frac{\text{W m}^{-2} \text{sr}^{-1}}{3.4\ \mu\text{m to } 4\ \mu\text{m}}^{300^\circ\text{K}}$$

and from Eq. (43) the quantum radiance

$$Q_{O,\Delta\lambda} = 4.8371 \times 10^{14} \times 300^3 \times 3.6652 \sim 4.79 \times 10^{18} \frac{\text{Quanta s}^{-1} \text{m}^{-2} \text{sr}^{-1}}{3.4\ \mu\text{m to } 4\ \mu\text{m}}^{300^\circ\text{K}}$$

A blackbody surface, for which the above data are valid, is brought into direct contact with a panel of specially doped semiconductors to form a thermal battery.

The conversion yield of the semiconductor, expressed in the manner introduced

in this paper, is  $N_D = \frac{300^\circ\text{K}}{3.4\mu\text{m to } 4\mu\text{m}} \times 0.2 \text{ electrons quantum}^{-1}$ . Since one ampere is  $0.624 \times 10^{19} \text{ electrons s}^{-1}$  the current  $I_D$  obtained is

$$I_D = \frac{\pi Q_{0,\Delta\lambda} \eta_D}{0.624 \times 10^{19}} = \frac{\pi \times 4.8 \times 10^{18} \times 0.2}{0.624 \times 10^{19}} = 0.48 \text{ Amperes m}^{-2}.$$

#### IV. Equations for the Difference in Radiance and Quantum Radiance Between Two Sources.

For calculation of the threshold in detection of thermal sources, not only the radiance or quantum radiance of the target source is important, but often the difference  $\Delta N_{0,\Delta\lambda}(T_s, T_b)$  between the radiance  $N_{0,\Delta\lambda,s}(T_s)$  of the target source and the radiance  $N_{0,\Delta\lambda,b}(T_b)$  of the background, or the difference  $\Delta Q_{0,\Delta\lambda}(T_s, T_b)$  between quantum radiance  $Q_{0,\Delta\lambda,s}(T_s)$  of the target source and the quantum radiance  $Q_{0,\Delta\lambda,b}(T_b)$  of the background, is of more significance. Thus, for  $\Delta N_{0,\Delta\lambda}(T_s, T_b)$  in  $\text{W m}^{-2} \text{ sr}^{-1}$ , by using Eq. (42), one finds

$$\Delta N_{0,\Delta\lambda}(T_s, T_b) = |N_{0,\Delta\lambda,s}(T_s) - N_{0,\Delta\lambda,b}(T_b)| = |1.8043 \times 10^{-8} [T_s^4 \Delta \eta_{rs}^{\dagger}(\lambda_{\text{max},s}, \lambda_{\text{min},s}) - T_b^4 \Delta \eta_{rb}^{\dagger}(\lambda_{\text{max},b}, \lambda_{\text{min},b})]| \quad (44)$$

and one finds for  $\Delta Q_{0,\Delta\lambda}(T_s, T_b)$  in quanta  $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$  that

$$\Delta Q_{0,\Delta\lambda}(T_s, T_b) = |Q_{0,\Delta\lambda,s}(T_s) - Q_{0,\Delta\lambda,b}(T_b)| = |4.8371 \times 10^{14} [T_s^3 \Delta \eta_{rs}^{\dagger}(\lambda_{\text{max},s}, \lambda_{\text{min},s}) - T_b^3 \Delta \eta_{rb}^{\dagger}(\lambda_{\text{max},b}, \lambda_{\text{min},b})]|, \quad (45)$$

where the subscript s stands for the target source and b for the background.

Evidently, the target can have a higher or lower temperature than the background, and in most cases will shield the background. However, there are cases where the radiance of the target source and that of the background, respectively the quantum flux coming from the target and that coming from the background will add, which will be the case for translucent background sources, for example gases. Thus, the so called background in an image may really be foreground, caused by luminescent gases and/or light scattered between target and detector, and/or may be caused by darkcurrent in an insufficiently cooled detector, etc. However, the latter will not be considered in this paper. If one deals with translucent radiation sources between the target source and the

detector, obviously, one cannot add the temperatures of the different sources for the analysis, but must add the effective radiances or, respectively, the quantum radiances of the different sources in an appropriate manner. This is not an easy task, since the different spectral distributions of the different sources may have to be considered. Then, the difference between target source and the sources considered by definition as background is given by

$$\Delta Q_{0,\Delta\lambda}(T_s, T_b) = \{\eta_t Q_{0,\Delta\lambda,s}(T_s) + Q_{0,\Delta\lambda,b}(T_b)\} - Q_{0,\Delta\lambda,b}(T_b) = \eta_t Q_{0,\Delta\lambda,s}(T_s), \quad (46)$$

where  $\eta_t$  is the transmission factor of the luminescent medium in front of the target source. For such cases then,  $\Delta N_{0,\Delta\lambda}(T_s, T_b)$  and  $\Delta Q_{0,\Delta\lambda}(T_s, T_b)$  may be found using Eqs. (42) and (43), respectively, by multiplying these equations by  $\eta_t$ . However, one must consider the increased statistical fluctuation in the value of  $\Delta Q_{0,\Delta\lambda}(T_s, T_b)$  when calculating the detection limit.

For the cases where the target is shielding the background, letting

$$T_s = T_b + \Delta T, \quad (47)$$

where  $\Delta T$  is the temperature difference between target and background and can have a positive or negative value, Eqs. (44) and (45) may be rewritten as

$$\begin{aligned} \Delta N_{0,\Delta\lambda}(T_s, T_b) &= |1.8043 \times 10^{-8} \times \{(T_b + \Delta T)^4 \eta_{Rs}^+(\lambda_{nmax,s}, \lambda_{nmin,s}) - T_b^4 \eta_{Rb}^+(\lambda_{nmax,b}, \lambda_{nmin,b})\}| = \\ &= |1.8043 \times 10^{-8} \times T_b^4 \{(1 + \frac{\Delta T^4}{T_b^4} + 4 \frac{\Delta T^3}{T_b^3} + 6 \frac{\Delta T^2}{T_b^2} + 4 \frac{\Delta T}{T_b}) \eta_{Rs}^+(\lambda_{nmax,s}, \lambda_{nmin,s}) - \eta_{Rb}^+(\lambda_{nmax,b}, \lambda_{nmin,b})\}| \end{aligned} \quad (48)$$

$$\begin{aligned} \Delta Q_{0,\Delta\lambda}(T_s, T_b) &= |4.8371 \times 10^{14} \times \{(T_b + \Delta T)^3 \eta_{Qs}^+(\lambda_{nmax,s}, \lambda_{nmin,s}) - T_b^3 \eta_{Qb}^+(\lambda_{nmax,b}, \lambda_{nmin,b})\}| = \\ &= |4.8371 \times 10^{14} \times T_b^3 \{(1 + \frac{\Delta T^3}{T_b^3} + 3 \frac{\Delta T^2}{T_b^2} + 3 \frac{\Delta T}{T_b}) \eta_{Qs}^+(\lambda_{nmax,s}, \lambda_{nmin,s}) - \eta_{Qb}^+(\lambda_{nmax,b}, \lambda_{nmin,b})\}|. \end{aligned} \quad (49)$$

Letting

$$\xi = \Delta T / T_b. \quad (50)$$

Eqs. (48) and (49) may be written as

$$\Delta N_{0,\Delta\lambda}(T_s, T_b) = |1.8043 \times 10^{-8} T_b^4 [(1+\xi)^4 \Delta \eta_{Rs}^+(\lambda_{nmax,s}, \lambda_{nmin,s}) - \Delta \eta_{Rb}^+(\lambda_{nmax,b}, \lambda_{nmin,b})]| \quad (51)$$

and

$$\Delta Q_{0,\Delta\lambda}(T_s, T_b) = |4.8371 \times 10^{-14} T_b^3 [(1+\xi)^3 \Delta \eta_{Qs}^+(\lambda_{nmax,s}, \lambda_{nmin,s}) - \Delta \eta_{Qb}^+(\lambda_{nmax,b}, \lambda_{nmin,b})]|. \quad (52)$$

#### Example IV.

The blackbody source of Example III has to be detected against a background of 295°K. The numerical value of the difference in radiance and the difference in quantum radiance for the 3.4  $\mu$ m to 4  $\mu$ m window in the atmosphere is needed. From Eq. (7) for the background temperature

$$\lambda_{opt} = \frac{2.8978 \times 10^{-3}}{295} = 9.823 \times 10^{-6} \text{ m},$$

from Eq. (13) for the background

$$\lambda_{nmax} = 3.45089 \times 10^2 \times 4 \times 10^{-6} \times 295 = 0.407205$$

$$\lambda_{nmin} = 3.45089 \times 10^2 \times 3.4 \times 10^{-6} \times 295 = 0.346123$$

and from Eq. (50)

$$\xi = \frac{\Delta T}{T_b} = \frac{5}{295} = 1.694915 \times 10^{-2}.$$

Then, by using Table 3 in connection with appropriate interpolation one finds for the background for  $\lambda_{nmax}$  that

$$\eta_{Rmax,b}^+ = 1.823600 \times 10^{-3}$$

$$\eta_{Qmax,b}^+ = 3.688356 \times 10^{-4}$$

and for  $\lambda_{nmin}$  that

$$\eta_{Rmin,b}^+ = 3.320624 \times 10^{-4}$$

$$\eta_{Qmin,b}^+ = 5.793181 \times 10^{-5}.$$

Hence

$$\Delta\eta_{Rb}^+ = 1.491538 \times 10^{-3} \quad \text{and} \quad \Delta\eta_{Qb}^+ = 3.109038 \times 10^{-4}.$$

By using the values for the  $\eta$ 's found in Example III for 300°K and by using the above values, Eq. (51) may be used to find the difference in the radiance

$$\begin{aligned} \Delta N_{O,\Delta\lambda} &= |1.8043 \times 10^{-8} \times 295^4 \times \{(1+0.016949)^4 \times 1.7299 \times 10^{-3} - 1.4915 \times 10^{-3}\}| \\ &\quad \Delta(300^\circ\text{K}-295^\circ\text{K}) \\ &\sim 4.9 \times 10^{-2} \text{ W m}^{-2} \text{ sr}^{-1} \\ &\quad 3.4\mu\text{m to } 4.0\mu\text{m} \end{aligned}$$

and Eq. (52) may be used to find the difference in the quantum radiance

$$\begin{aligned} \Delta Q_{O,\Delta\lambda} &= |4.8371 \times 10^{14} \times 295^3 \times \{(1+0.016949)^3 \times 3.6652 \times 10^{-4} - 3.1090 \times 10^{-4}\}| \\ &\quad \Delta(300^\circ\text{K}-295^\circ\text{K}) \\ &\sim 9.3 \times 10^{17} \text{ Quanta s}^{-1} \text{ m}^{-2} \text{ sr}^{-1} \\ &\quad 3.4\mu\text{m to } 4.0\mu\text{m} \end{aligned}$$

Since, in Example III,  $Q_{O,\Delta\lambda} \sim 4.8 \times 10^{18} \text{ Quanta s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$  the value of  $Q_{O,\Delta\lambda}$  for 295°K is

$$Q_{O,\Delta\lambda} = 4.8 \times 10^{18} - 0.93 \times 10^{17} \sim 3.9 \times 10^{18} \text{ Quanta s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}, \quad 295^\circ\text{K} \quad 3.4\mu\text{m to } 4.0\mu\text{m}$$

Eqs. (51) and (52) may be solved for  $\xi$ . Thus,

$$\begin{aligned} \xi &= \left\{ \frac{\frac{\Delta N_{O,\Delta\lambda}(T_s, T_b)}{1.8043 \times 10^{-8} T_b^4} + \Delta\eta_{Rb}^+(\lambda_{n\max,b}, \lambda_{n\min,b})}{\Delta\eta_{Rs}^+(\lambda_{n\max,s}, \lambda_{n\min,s})} \right\}^{1/4} - 1 \\ &= \left\{ \frac{\frac{\Delta Q_{O,\Delta\lambda}(T_s, T_b)}{4.8371 \times 10^{14} \times T_b^3} + \Delta\eta_{Qb}^+(\lambda_{n\max,b}, \lambda_{n\min,b})}{\Delta\eta_{Qs}^+(\lambda_{n\max,s}, \lambda_{n\min,s})} \right\}^{1/3} - 1. \end{aligned} \quad (53)$$

If  $\Delta N_{\text{Omin},\Delta\lambda}(T_s, T_b)$  and  $\Delta Q_{\text{Omin},\Delta\lambda}(T_s, T_b)$  are respectively the minimum difference in the radiance and the minimum difference in the quantum radiance a blackbody target source can have against a given blackbody background under certain geometrical and optical conditions and be detectable with a certain signal to noise ratio, then the smallest temperature difference  $\Delta T_{\text{min}}$  in °K corresponding to these conditions, is given by rewriting Eq. (53) by

$$\Delta T_{\text{min}} = \left\{ \left( \frac{\Delta N_{\text{Omin},\Delta\lambda}(T_s, T_b)}{1.8043 \times 10^{-8} T_b^4 \Delta \eta_{\text{Rb}}^+(\lambda_{\text{nmax}}, b, \lambda_{\text{nmin}}, b)} + 1 \right)^{1/4} K_{\text{R}}^{\frac{1}{4}}(\lambda_{\text{nmax}}, \lambda_{\text{nmin}}) - 1 \right\} T_b$$

$$= \left\{ \left( \frac{\Delta Q_{\text{Omin},\Delta\lambda}(T_s, T_b)}{4.8371 \times 10^{-14} T_b^3 \Delta \eta_{\text{Qb}}^+(\lambda_{\text{nmax}}, b, \lambda_{\text{nmin}}, b)} + 1 \right)^{1/3} K_{\text{Q}}^{\frac{1}{3}}(\lambda_{\text{nmax}}, \lambda_{\text{nmin}}) - 1 \right\} T_b, \quad (54)$$

where

$$K_{\text{R}}(\lambda_{\text{nmax}}, \lambda_{\text{nmin}}) = \frac{\Delta \eta_{\text{Rb}}^+(\lambda_{\text{nmax}}, b, \lambda_{\text{nmin}}, b)}{\Delta \eta_{\text{Rs}}^+(\lambda_{\text{nmax}}, s, \lambda_{\text{nmin}}, s)} \quad (55)$$

and

$$K_{\text{Q}}(\lambda_{\text{nmax}}, \lambda_{\text{nmin}}) = \frac{\Delta \eta_{\text{Qb}}^+(\lambda_{\text{nmax}}, b, \lambda_{\text{nmin}}, b)}{\Delta \eta_{\text{Qs}}^+(\lambda_{\text{nmax}}, s, \lambda_{\text{nmin}}, s)}. \quad (56)$$

Evidently,  $K_{\text{R}}(\lambda_{\text{nmax}}, \lambda_{\text{nmin}})$  and  $K_{\text{Q}}(\lambda_{\text{nmax}}, \lambda_{\text{nmin}})$  can be  $\leq 1$ , depending on whether the interval  $\Delta\lambda$  is below or above  $\lambda_{\text{peak}}$  and/or if  $\Delta T$  is a positive or negative value, i.e. if  $T_s$  is larger or smaller than  $T_b$ .

However, for using Eq. (54) in order to solve for  $\Delta T_{\text{min}}$  for given  $T_b$  and  $\Delta N_{\text{Omin},\Delta\lambda}$  or  $\Delta Q_{\text{Omin},\Delta\lambda}$ ,  $\Delta \eta_{\text{Rs}}^+(\lambda_{\text{nmax}}, s, \lambda_{\text{nmin}}, s)$  or  $\Delta \eta_{\text{Qs}}^+(\lambda_{\text{nmax}}, s, \lambda_{\text{nmin}}, s)$  is required. In order to obtain these values from Table 3 in connection with Eq. (13), one must know  $\Delta T_{\text{min}}$ . Hence, if the value of  $\Delta N_{\text{Omin},\Delta\lambda}$  or  $\Delta Q_{\text{Omin},\Delta\lambda}$  is given,  $\Delta T_{\text{min}}$  can only be found by successive approximation by using Eqs. (51) or (52), as is shown in the next example.

#### Example V

Given

$$\Delta Q_{\text{Omin},\Delta\lambda} = 5 \times 10^{17} \frac{\Delta(300^\circ - T_b)}{3.4\mu\text{m to } 4.0\mu\text{m}} \text{ Quanta s}^{-1} \text{ m}^{-2} \text{ sr}^{-1} \text{ and } 1.5 \times 10^{16} \frac{\Delta(300^\circ - T_b)}{3.4\mu\text{m to } 4.0\mu\text{m}} \text{ Quanta s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}.$$

For the above values  $\Delta T_{\text{min}}$  is needed; also the numerical values of the corresponding  $N_{\text{Omin},\Delta\lambda}$  are wanted.



temperature differences, the second term in the parentheses of Eq. (59) may be neglected; then Eq. (50) may be used for substitution of  $\xi$ . Hence for threshold temperature differences

$$\Delta N_{0,\Delta\lambda_{\max},\text{thr}}(T_b,\Delta T) \sim |7.2 \times 10^{-8} T_b^4 \xi| \sim |7.2 \times 10^{-8} T_b^3 \Delta T|. \quad (60)$$

In the same manner and for the same assumptions, by using Eq. (52) one finds for the maximum difference in the quantum radiance  $\Delta Q_{0,\Delta\lambda_{\max}}(T_b,\Delta T)$  in Quanta  $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$  the expression

$$\Delta Q_{0,\Delta\lambda_{\max}}(T_b,\Delta T) = |4.837 \times 10^{14} T_b^3 \{(1+\Delta T/T_b)^3 - 1\}|. \quad (61)$$

Hence

$$\Delta Q_{0,\Delta\lambda_{\max}}(T_b,\Delta T) = |4.837 \times 10^{14} T_b^3 (3\xi + 3\xi^2)| \sim |1.5 \times 10^{15} T_b^3 \xi (1+\xi)| \quad (62)$$

and for threshold temperature differences where  $\xi \ll 1$

$$\Delta Q_{0,\Delta\lambda_{\max},\text{thr}}(T_b,\Delta T) \sim |1.5 \times 10^{15} T_b^3 \xi| \sim |1.5 \times 10^{15} T_b^2 \Delta T|. \quad (63)$$

The ratios  $\Delta N_{0,\Delta\lambda}(T_s, T_b) / \Delta N_{0,\Delta\lambda_{\max}}(T_b, \Delta T)$  and  $\Delta Q_{0,\Delta\lambda}(T_s, T_b) / \Delta Q_{0,\Delta\lambda_{\max}}(T_b, \Delta T)$  will be called the utilization factors  $\eta_{UB}$ . Thus, by using Eqs. (51) and (59)

$$\eta_{UR}(T_b, \Delta T, \lambda_{n\max}, \lambda_{n\min}) = \left| \frac{(1+\xi)^4 \Delta \eta_{Rs}^{\dagger}(\lambda_{n\max,s}, \lambda_{n\min,s}) - \Delta \eta_{Rb}^{\dagger}(\lambda_{n\max,b}, \lambda_{n\min,b})}{4\xi + 6\xi^2} \right| \quad (64)$$

and by using Eqs. (52) and (62)

$$\eta_{UQ}(T_b, \Delta T, \lambda_{n\max}, \lambda_{n\min}) = \left| \frac{(1+\xi)^3 \Delta \eta_{Qs}^{\dagger}(\lambda_{n\max,s}, \lambda_{n\min,s}) - \Delta \eta_{Qb}^{\dagger}(\lambda_{n\max,b}, \lambda_{n\min,b})}{3\xi + 3\xi^2} \right|, \quad (65)$$

where for  $\xi \ll 1$ , the second term in the denominator of Eqs. (64) and (65)

may be neglected.

#### Example VI

The values of  $\eta_{UR}$  and  $\eta_{UQ}$  for the data of Example IV are needed for determining the maximum theoretical gain possible by extending the wavelength interval under consideration. Thus, using Eq. (64),

$$\eta_{UR} = \frac{(1+0.01695)^4 \times 1.7299 \times 10^{-3} - 1.4915 \times 10^{-3}}{4 \times 0.01695 + 6 \times 0.01695^2} \sim 5.2 \times 10^{-3}$$

and using Eq. (65),

$$\eta_{UQ} = \frac{(1+0.01695)^3 \times 3.6652 \times 10^{-4} - 3.1090 \times 10^{-4}}{3 \times 0.01695(1+0.01695)} \sim 1.5 \times 10^{-3}.$$

Hence, when in Example IV the selected bandwidth of  $\pm 0.3 \mu\text{m}$  at  $3.7 \mu\text{m}$  is broadened to cover the entire spectrum, the gain in quantum radiance is

$$\frac{1}{\eta_{UQ}} = \frac{1}{1.5 \times 10^{-3}} \sim 670$$

#### V. The Inflection Points of the Normalized Blackbody Functions

The values of  $\lambda_n$  for the inflection points of the functions  $\eta_R(\lambda_n)$  and  $\eta_Q(\lambda_n)$  may be of interest and can be found by equating to zero the second derivatives of the functions  $\eta_R(\lambda_n)$  and  $\eta_Q(\lambda_n)$ . Hence, letting the numerator of Eq. (12) be  $K_1$  and the exponent 4.96511 of  $e$  be  $K_2$ , Eq. (12) may be written as

$$\eta_R(\lambda_n) = K_1 \lambda_n^{-5} (e^{K_2 \lambda_n^{-1}} - 1)^{-1} \quad (66)$$

and one finds for the first derivative

$$\eta_R'(\lambda_n) = -K_1 \lambda_n^{-6} (e^{K_2 \lambda_n^{-1}} - 1)^{-1} [5 + K_2 \lambda_n^{-1} (e^{K_2 \lambda_n^{-1}} - 1)^{-1} e^{K_2 \lambda_n^{-1}}]. \quad (67)$$

Then, the second derivative  $\eta_R''(\lambda_n)$  is given by

$$\eta_R''(\lambda_n) = 30 - K_2 \lambda_n^{-1} (e^{K_2 \lambda_n^{-1}} - 1)^{-1} e^{K_2 \lambda_n^{-1}} \{12 - K_2 \lambda_n^{-1} [2(e^{K_2 \lambda_n^{-1}} - 1)^{-1} e^{K_2 \lambda_n^{-1}} - 1]\}, \quad (68)$$

Letting

$$K_2 \lambda_n^{-1} = Z, \quad (69)$$

Eq. (68) may be rewritten as

$$\eta_R''(\lambda_n) = 30 - Z(e^Z - 1)^{-1} e^Z (12 - Z[2(e^Z - 1)^{-1} e^Z - 1]). \quad (70)$$

Equating  $\eta_R''(\lambda_n)$  to zero, yields

$$Z^2 = \frac{\frac{30}{e^Z} (e^Z - 1)^2 - 12Z(e^Z - 1)}{(e^Z - 1) - 2e^Z}. \quad (71)$$

This equation may be solved for the numerical values of  $Z$  by successive approximation, which yields

$$Z_1 = 8.445 \quad \text{and} \quad Z_2 = 3.524. \quad (72)$$

Using these values in Eq. (69) and solving  $\lambda_n$ , one obtains the numerical values of  $\lambda_n$  for the inflection points of  $\eta_Q(\lambda_n)$  which are

$$\lambda_{nR1} = 0.58793 \quad \text{and} \quad \lambda_{nR2} = 1.4089. \quad (73)$$

Commencing with Eq. (24) and by performing operations similar to those above, the inflection points of  $\eta_Q(\lambda_n)$  may be found. Thus, one finds for  $\eta_Q''(\lambda_n) = 0$  that

$$Z^2 = \frac{\frac{20}{e^Z} (e^Z - 1) - 10Z(e^Z - 1)}{(e^Z - 1) - 2e^Z}, \quad (74)$$

which yields for

$$Z_1 = 7.222 \quad \text{and for} \quad Z_2 = 2.699. \quad (75)$$

Thus, using Eq. (69) the inflection points of  $\eta_Q(\lambda_n)$  are at

$$\lambda_{nQ1} = 0.6875 \quad \text{and} \quad \lambda_{nQ2} = 1.8396. \quad (76)$$

Example VII.

The wavelength of the inflection points for  $\eta_R(\lambda_n)$  and  $\eta_Q(\lambda_n)$  for 300°K might be of interest.

From Eq. (13) the wavelength  $\lambda_\beta$  of the inflection points are given by

$$\lambda_\beta = \frac{\lambda_{n\beta}}{3.45089 \times 10^2 T}.$$

Thus,

$$\lambda_{R1} = \frac{0.58793}{3.45089 \times 10^2 \times 300} = 5.679 \times 10^{-6} \text{ m}$$

$$\lambda_{R2} = \frac{1.4089}{3.45089 \times 10^2 \times 300} = 13.609 \times 10^{-6} \text{ m}$$

$$\lambda_{Q1} = \frac{0.6875}{3.45089 \times 10^2 \times 300} = 6.641 \times 10^{-6} \text{ m}$$

$$\lambda_{Q2} = \frac{1.8396}{3.45089 \times 10^2 \times 300} = 17.769 \times 10^{-6} \text{ m}.$$

The transmission factor  $\eta_{Mn}$  plotted in Fig 7<sup>6</sup> is valid for the normalized air mass, i.e. the so-called air mass 1 which is a vertical air column at standard pressure of 760 mm Hg and temperature 0° C. This column, when over an area of 1 cm<sup>2</sup>, contains  $2.157 \times 10^{25}$  gas molecules and yields a homogeneous atmosphere of a height of 7.991 km.<sup>7</sup> One can calculate the transmission-factor  $\eta_M$  through the earth's atmosphere for the angle  $\phi$  in reference to the normal of the earth by raising  $\eta_{Mn}$  to the exponential power of the ratio  $\epsilon$  of the traversed airmass to the vertical airmass, i.e.

$$\eta_M = \eta_{Mn}^\epsilon \quad (77)$$

$$\epsilon = \frac{\Delta r}{r^\dagger}, \quad (78)$$

where  $\Delta r$  is the vertical height of the atmosphere and  $r^\dagger$  is the path length through the atmosphere at angle  $\rho$  to the normal of the earth. Any changes in the path as affected by diffraction has been neglected in the above, since it will have very little influence on the following approximation.

Since beyond 31 Km altitude less than 1% of the air remains one can, by using the cosine law, derive an expression for  $\epsilon$  which by using the 31 Km (permitting a 1% error) or any other reasonable value, will give a useful approximation for  $\epsilon$ . Thus,

$$\epsilon = \frac{r^\dagger}{\Delta r} = \left( \frac{r^2}{\Delta r^2} \cos^2 \phi + 1 + \frac{2r}{\Delta r} \right)^{\frac{1}{2}} - \frac{r}{\Delta r} \cos \phi, \quad (79)$$

where  $r$  is the earth's radius.

Using in Eq. (65) the values  $r = 6371$  Km and  $\Delta r = 31.885$  Km one obtains the approximations

$$\epsilon \sim 20[(1 + 10^2 \cos^2 \phi)^{\frac{1}{2}} - 10 \cos \phi] \quad , \quad \epsilon > 1.4; \quad (80)$$

$$\epsilon \sim \frac{1}{\cos \phi} \quad , \quad \epsilon < 1.4; \quad (81)$$

and

$$\cos \phi \sim \frac{1}{\epsilon} - \frac{\epsilon}{400} \quad , \quad \phi > 45^\circ, \epsilon > 1.4; \quad (82)$$

$$\cos \phi \sim \frac{1}{\epsilon} \quad , \quad \phi < 45^\circ, \epsilon < 1.4. \quad (83)$$

### Example VIII

In the graph of Fig. 7 one finds for the spectral interval 8.5  $\mu$ m to 11  $\mu$ m an average value for  $\eta_{Mn} = 0.88$ . The value of  $\phi$  is of interest. From Eq. (77)

$$\log_e \eta_M = \epsilon \log_e \eta_{Mn}.$$

Thus,

$$\epsilon = \frac{\log_e 0.4}{\log_e 0.88} = \frac{-0.91629}{-0.12783} = 7.17.$$

Then, by using Eq. (82)

$$\cos \phi \sim \frac{1}{\epsilon} - \frac{\epsilon}{400} = 0.1215$$

$$\phi = 83^\circ 1'.$$

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Table 1a. Normalized blackbody functions for spectral radiance,  $\eta_R(\lambda_n)$ , and spectral quantum flux,  $\eta_Q(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R(\lambda_n)$ | $\eta_Q(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R(\lambda_n)$ | $\eta_Q(\lambda_n)$ |
|---------------------------------------------|---------------------|---------------------|---------------------------------------------|---------------------|---------------------|
| 0.18                                        | 0.000001            | 0.000000            | 0.50                                        | 0.221724            | 0.099038            |
| 0.19                                        | 0.000003            | 0.000000            | 0.51                                        | 0.243993            | 0.111165            |
| 0.20                                        | 0.000007            | 0.000001            | 0.52                                        | 0.267009            | 0.124037            |
| 0.21                                        | 0.000019            | 0.000004            | 0.53                                        | 0.290677            | 0.137628            |
| 0.22                                        | 0.000044            | 0.000009            | 0.54                                        | 0.314899            | 0.151910            |
| 0.23                                        | 0.000093            | 0.000019            | 0.55                                        | 0.339577            | 0.166848            |
| 0.24                                        | 0.000185            | 0.000040            | 0.56                                        | 0.364612            | 0.182407            |
| 0.25                                        | 0.000345            | 0.000077            | 0.57                                        | 0.389907            | 0.198544            |
| 0.26                                        | 0.000609            | 0.000142            | 0.58                                        | 0.415367            | 0.215219            |
| 0.27                                        | 0.001024            | 0.000247            | 0.59                                        | 0.440898            | 0.232387            |
| 0.28                                        | 0.001646            | 0.000412            | 0.60                                        | 0.466411            | 0.250001            |
| 0.29                                        | 0.002545            | 0.000659            | 0.61                                        | 0.491822            | 0.268015            |
| 0.30                                        | 0.003801            | 0.001019            | 0.62                                        | 0.517049            | 0.286382            |
| 0.31                                        | 0.005503            | 0.001524            | 0.63                                        | 0.542017            | 0.305052            |
| 0.32                                        | 0.007745            | 0.002214            | 0.64                                        | 0.566653            | 0.323980            |
| 0.33                                        | 0.010627            | 0.003133            | 0.65                                        | 0.590892            | 0.343118            |
| 0.34                                        | 0.014249            | 0.004328            | 0.66                                        | 0.614674            | 0.362418            |
| 0.35                                        | 0.018708            | 0.005849            | 0.67                                        | 0.637943            | 0.381837            |
| 0.36                                        | 0.024099            | 0.007750            | 0.68                                        | 0.660649            | 0.401330            |
| 0.37                                        | 0.030506            | 0.010083            | 0.69                                        | 0.682748            | 0.420853            |
| 0.38                                        | 0.038035            | 0.012902            | 0.70                                        | 0.704198            | 0.440367            |
| 0.39                                        | 0.046659            | 0.016256            | 0.71                                        | 0.724967            | 0.459831            |
| 0.40                                        | 0.056518            | 0.020196            | 0.72                                        | 0.745023            | 0.479207            |
| 0.41                                        | 0.067616            | 0.024766            | 0.73                                        | 0.764341            | 0.498461            |
| 0.42                                        | 0.079973            | 0.030006            | 0.74                                        | 0.782901            | 0.517559            |
| 0.43                                        | 0.093594            | 0.035953            | 0.75                                        | 0.800684            | 0.536468            |
| 0.44                                        | 0.108467            | 0.042635            | 0.76                                        | 0.817678            | 0.555159            |
| 0.45                                        | 0.124567            | 0.050077            | 0.77                                        | 0.833874            | 0.573604            |
| 0.46                                        | 0.141856            | 0.058295            | 0.78                                        | 0.849265            | 0.591778            |
| 0.47                                        | 0.160283            | 0.067299            | 0.79                                        | 0.863848            | 0.609657            |
| 0.48                                        | 0.179786            | 0.077094            | 0.80                                        | 0.877623            | 0.627219            |
| 0.49                                        | 0.200293            | 0.087676            | 0.81                                        | 0.890593            | 0.644445            |

Table 1b. Normalized blackbody functions for spectral radiance,  $\eta_R(\lambda_n)$ ,  
and spectral quantum flux,  $\eta_Q(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R(\lambda_n)$ | $\eta_Q(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R(\lambda_n)$ | $\eta_Q(\lambda_n)$ |
|---------------------------------------------|---------------------|---------------------|---------------------------------------------|---------------------|---------------------|
| 0.82                                        | 0.902763            | 0.661316            | 1.70                                        | 0.571052            | 0.867253            |
| 0.83                                        | 0.914139            | 0.677816            | 1.75                                        | 0.539671            | 0.843701            |
| 0.84                                        | 0.924732            | 0.693931            | 1.80                                        | 0.509807            | 0.819785            |
| 0.85                                        | 0.934551            | 0.709649            | 1.85                                        | 0.481469            | 0.795722            |
| 0.86                                        | 0.943610            | 0.724957            | 1.90                                        | 0.454640            | 0.771690            |
| 0.87                                        | 0.951923            | 0.739848            | 1.95                                        | 0.429290            | 0.747836            |
| 0.88                                        | 0.959504            | 0.754311            | 2.00                                        | 0.405371            | 0.724276            |
| 0.89                                        | 0.966370            | 0.768342            | 2.10                                        | 0.361612            | 0.678397            |
| 0.90                                        | 0.972538            | 0.781934            | 2.20                                        | 0.322881            | 0.634581            |
| 0.91                                        | 0.978026            | 0.795084            | 2.30                                        | 0.288668            | 0.593128            |
| 0.92                                        | 0.982852            | 0.807788            | 2.40                                        | 0.258473            | 0.554176            |
| 0.93                                        | 0.987036            | 0.820045            | 2.50                                        | 0.231826            | 0.517754            |
| 0.94                                        | 0.990598            | 0.831853            | 2.60                                        | 0.208299            | 0.483819            |
| 0.95                                        | 0.993556            | 0.843213            | 2.70                                        | 0.187509            | 0.452281            |
| 0.96                                        | 0.995931            | 0.854126            | 2.80                                        | 0.169116            | 0.423022            |
| 0.97                                        | 0.997744            | 0.864594            | 2.90                                        | 0.152818            | 0.395909            |
| 0.98                                        | 0.999013            | 0.874618            | 3.00                                        | 0.138356            | 0.370801            |
| 0.99                                        | 0.999760            | 0.884204            | 3.50                                        | 0.086539            | 0.270582            |
| 1.00                                        | 1.000000            | 0.893354            | 4.00                                        | 0.056499            | 0.201893            |
| 1.05                                        | 0.994379            | 0.932745            | 4.50                                        | 0.038291            | 0.153934            |
| 1.10                                        | 0.979066            | 0.962113            | 5.00                                        | 0.026800            | 0.119710            |
| 1.15                                        | 0.956227            | 0.982381            | 5.50                                        | 0.019285            | 0.094756            |
| 1.20                                        | 0.927747            | 0.994562            | 6.00                                        | 0.014215            | 0.076191            |
| 1.25                                        | 0.895226            | 0.999687            | 6.50                                        | 0.010698            | 0.062123            |
| 1.30                                        | 0.859988            | 0.998751            | 7.00                                        | 0.008201            | 0.051285            |
| 1.35                                        | 0.823109            | 0.992687            | 7.50                                        | 0.006389            | 0.042809            |
| 1.40                                        | 0.785444            | 0.982346            | 8.00                                        | 0.005050            | 0.036090            |
| 1.45                                        | 0.747664            | 0.968492            | 8.50                                        | 0.004043            | 0.030699            |
| 1.50                                        | 0.710285            | 0.951799            | 9.00                                        | 0.003274            | 0.026324            |
| 1.55                                        | 0.673692            | 0.932856            | 9.50                                        | 0.002679            | 0.022739            |
| 1.60                                        | 0.638168            | 0.912171            | 10.00                                       | 0.002214            | 0.019775            |
| 1.65                                        | 0.603911            | 0.890180            | 20.00                                       | 0.000158            | 0.002820            |

Table 2a. Cumulative blackbody functions for radiant power,  $\eta_R^{\Sigma}(\lambda_n)$ , and quantum flux,  $\eta_Q^{\Sigma}(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^{\Sigma}(\lambda_n)$ | $\eta_Q^{\Sigma}(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^{\Sigma}(\lambda_n)$ | $\eta_Q^{\Sigma}(\lambda_n)$ |
|---------------------------------------------|------------------------------|------------------------------|---------------------------------------------|------------------------------|------------------------------|
| 0.20                                        | 0.000000                     | 0.000000                     | 0.52                                        | 0.020166                     | 0.008318                     |
| 0.21                                        | 0.000000                     | 0.000000                     | 0.53                                        | 0.022954                     | 0.009625                     |
| 0.22                                        | 0.000000                     | 0.000000                     | 0.54                                        | 0.025982                     | 0.011073                     |
| 0.23                                        | 0.000001                     | 0.000000                     | 0.55                                        | 0.029254                     | 0.012666                     |
| 0.24                                        | 0.000002                     | 0.000001                     | 0.56                                        | 0.032775                     | 0.014412                     |
| 0.25                                        | 0.000005                     | 0.000001                     | 0.57                                        | 0.036547                     | 0.016316                     |
| 0.26                                        | 0.000010                     | 0.000002                     | 0.58                                        | 0.040573                     | 0.018384                     |
| 0.27                                        | 0.000018                     | 0.000004                     | 0.59                                        | 0.044855                     | 0.020622                     |
| 0.28                                        | 0.000031                     | 0.000007                     | 0.60                                        | 0.049391                     | 0.023034                     |
| 0.29                                        | 0.000052                     | 0.000013                     | 0.61                                        | 0.054182                     | 0.025623                     |
| 0.30                                        | 0.000083                     | 0.000021                     | 0.62                                        | 0.059227                     | 0.028395                     |
| 0.31                                        | 0.000129                     | 0.000033                     | 0.63                                        | 0.064523                     | 0.031352                     |
| 0.32                                        | 0.000195                     | 0.000052                     | 0.64                                        | 0.070066                     | 0.034497                     |
| 0.33                                        | 0.000286                     | 0.000078                     | 0.65                                        | 0.075854                     | 0.037832                     |
| 0.34                                        | 0.000410                     | 0.000116                     | 0.66                                        | 0.081883                     | 0.041360                     |
| 0.35                                        | 0.000574                     | 0.000166                     | 0.67                                        | 0.088146                     | 0.045081                     |
| 0.36                                        | 0.000787                     | 0.000234                     | 0.68                                        | 0.094640                     | 0.048997                     |
| 0.37                                        | 0.001059                     | 0.000323                     | 0.69                                        | 0.101357                     | 0.053108                     |
| 0.38                                        | 0.001401                     | 0.000437                     | 0.70                                        | 0.108292                     | 0.057414                     |
| 0.39                                        | 0.001823                     | 0.000582                     | 0.71                                        | 0.115439                     | 0.061915                     |
| 0.40                                        | 0.002338                     | 0.000764                     | 0.72                                        | 0.122789                     | 0.066610                     |
| 0.41                                        | 0.002958                     | 0.000988                     | 0.73                                        | 0.130337                     | 0.071499                     |
| 0.42                                        | 0.003695                     | 0.001262                     | 0.74                                        | 0.138074                     | 0.076579                     |
| 0.43                                        | 0.004561                     | 0.001591                     | 0.75                                        | 0.145992                     | 0.081849                     |
| 0.44                                        | 0.005571                     | 0.001983                     | 0.76                                        | 0.154085                     | 0.087308                     |
| 0.45                                        | 0.006735                     | 0.002446                     | 0.77                                        | 0.162343                     | 0.092952                     |
| 0.46                                        | 0.008066                     | 0.002987                     | 0.78                                        | 0.170759                     | 0.098779                     |
| 0.47                                        | 0.009576                     | 0.003615                     | 0.79                                        | 0.179326                     | 0.104786                     |
| 0.48                                        | 0.011275                     | 0.004336                     | 0.80                                        | 0.188034                     | 0.110971                     |
| 0.49                                        | 0.013175                     | 0.005159                     | 0.81                                        | 0.196875                     | 0.117329                     |
| 0.50                                        | 0.015284                     | 0.006092                     | 0.82                                        | 0.205843                     | 0.123859                     |
| 0.51                                        | 0.017612                     | 0.007142                     | 0.83                                        | 0.214928                     | 0.130555                     |

Table 2b. Cumulative blackbody functions for radiant power,  $\eta_R^*(\lambda_n)$ , and quantum flux,  $\eta_Q^*(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^*(\lambda_n)$ | $\eta_Q^*(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^*(\lambda_n)$ | $\eta_Q^*(\lambda_n)$ |
|---------------------------------------------|-----------------------|-----------------------|---------------------------------------------|-----------------------|-----------------------|
| 0.84                                        | 0.224123              | 0.137414              | 1.80                                        | 1.003433              | 1.019602              |
| 0.85                                        | 0.233420              | 0.144432              | 1.85                                        | 1.028209              | 1.059990              |
| 0.86                                        | 0.242812              | 0.151605              | 1.90                                        | 1.051605              | 1.099175              |
| 0.87                                        | 0.252290              | 0.158930              | 1.95                                        | 1.073697              | 1.137162              |
| 0.88                                        | 0.261848              | 0.166401              | 2.00                                        | 1.094558              | 1.173963              |
| 0.89                                        | 0.271478              | 0.174014              | 2.10                                        | 1.132863              | 1.244082              |
| 0.90                                        | 0.281173              | 0.181766              | 2.20                                        | 1.167048              | 1.309712              |
| 0.91                                        | 0.290926              | 0.189652              | 2.30                                        | 1.197590              | 1.371077              |
| 0.92                                        | 0.300731              | 0.197666              | 2.40                                        | 1.224916              | 1.428421              |
| 0.93                                        | 0.310581              | 0.205806              | 2.50                                        | 1.249403              | 1.481996              |
| 0.94                                        | 0.320470              | 0.214066              | 2.60                                        | 1.271385              | 1.532055              |
| 0.95                                        | 0.330391              | 0.222441              | 2.70                                        | 1.291154              | 1.578840              |
| 0.96                                        | 0.340339              | 0.230928              | 2.80                                        | 1.308967              | 1.622587              |
| 0.97                                        | 0.350308              | 0.239522              | 2.90                                        | 1.325047              | 1.663516              |
| 0.98                                        | 0.360292              | 0.248219              | 3.00                                        | 1.339591              | 1.701835              |
| 0.99                                        | 0.370286              | 0.257013              | 3.50                                        | 1.394598              | 1.860581              |
| 1.00                                        | 0.380285              | 0.265901              | 4.00                                        | 1.429708              | 1.977645              |
| 1.05                                        | 0.430190              | 0.311597              | 4.50                                        | 1.453043              | 2.065908              |
| 1.10                                        | 0.479562              | 0.359009              | 5.00                                        | 1.469106              | 2.133855              |
| 1.15                                        | 0.527972              | 0.407657              | 5.50                                        | 1.480500              | 2.187155              |
| 1.20                                        | 0.575091              | 0.457112              | 6.00                                        | 1.488795              | 2.229571              |
| 1.25                                        | 0.620679              | 0.506996              | 6.50                                        | 1.494972              | 2.264092              |
| 1.30                                        | 0.664568              | 0.556980              | 7.00                                        | 1.499662              | 2.292330              |
| 1.35                                        | 0.706651              | 0.606785              | 7.50                                        | 1.503286              | 2.315769              |
| 1.40                                        | 0.746866              | 0.656177              | 8.00                                        | 1.506130              | 2.335431              |
| 1.45                                        | 0.785193              | 0.704961              | 8.50                                        | 1.508391              | 2.352080              |
| 1.50                                        | 0.821639              | 0.752979              | 9.00                                        | 1.510212              | 2.366298              |
| 1.55                                        | 0.856235              | 0.800104              | 9.50                                        | 1.511694              | 2.378535              |
| 1.60                                        | 0.889026              | 0.846236              | 10.00                                       | 1.512913              | 2.389141              |
| 1.65                                        | 0.920073              | 0.891299              | 20.00                                       | 1.519720              | 2.467858              |
| 1.70                                        | 0.949441              | 0.935238              | 100.00                                      | 1.520797              | 2.496042              |
| 1.75                                        | 0.977203              | 0.978014              | 140.00                                      | 1.520803              | 2.496655              |

Table 3a. Normalized cumulative blackbody functions for radiant power,  $\eta_R^t(\lambda_n)$ , and quantum flux,  $\eta_Q^t(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^t(\lambda_n)$ | $\eta_Q^t(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^t(\lambda_n)$ | $\eta_Q^t(\lambda_n)$ |
|---------------------------------------------|-----------------------|-----------------------|---------------------------------------------|-----------------------|-----------------------|
| 0.20                                        | 0.000000              | 0.000000              | 0.52                                        | 0.013260              | 0.003331              |
| 0.21                                        | 0.000000              | 0.000000              | 0.53                                        | 0.015094              | 0.003854              |
| 0.22                                        | 0.000000              | 0.000000              | 0.54                                        | 0.017084              | 0.004434              |
| 0.23                                        | 0.000001              | 0.000000              | 0.55                                        | 0.019236              | 0.005072              |
| 0.24                                        | 0.000002              | 0.000000              | 0.56                                        | 0.021551              | 0.005771              |
| 0.25                                        | 0.000003              | 0.000000              | 0.57                                        | 0.024031              | 0.006533              |
| 0.26                                        | 0.000006              | 0.000001              | 0.58                                        | 0.026679              | 0.007362              |
| 0.27                                        | 0.000012              | 0.000002              | 0.59                                        | 0.029494              | 0.008258              |
| 0.28                                        | 0.000020              | 0.000003              | 0.60                                        | 0.032477              | 0.009223              |
| 0.29                                        | 0.000034              | 0.000005              | 0.61                                        | 0.035627              | 0.010260              |
| 0.30                                        | 0.000055              | 0.000008              | 0.62                                        | 0.038944              | 0.011370              |
| 0.31                                        | 0.000085              | 0.000013              | 0.63                                        | 0.042427              | 0.012554              |
| 0.32                                        | 0.000128              | 0.000021              | 0.64                                        | 0.046072              | 0.013814              |
| 0.33                                        | 0.000188              | 0.000031              | 0.65                                        | 0.049878              | 0.015149              |
| 0.34                                        | 0.000270              | 0.000046              | 0.66                                        | 0.053842              | 0.016562              |
| 0.35                                        | 0.000377              | 0.000067              | 0.67                                        | 0.057960              | 0.018052              |
| 0.36                                        | 0.000518              | 0.000094              | 0.68                                        | 0.062230              | 0.019620              |
| 0.37                                        | 0.000697              | 0.000129              | 0.69                                        | 0.066647              | 0.021266              |
| 0.38                                        | 0.000921              | 0.000175              | 0.70                                        | 0.071207              | 0.022990              |
| 0.39                                        | 0.001199              | 0.000233              | 0.71                                        | 0.075906              | 0.024793              |
| 0.40                                        | 0.001537              | 0.000306              | 0.72                                        | 0.080740              | 0.026673              |
| 0.41                                        | 0.001945              | 0.000396              | 0.73                                        | 0.085702              | 0.028630              |
| 0.42                                        | 0.002429              | 0.000505              | 0.74                                        | 0.090790              | 0.030665              |
| 0.43                                        | 0.002999              | 0.000637              | 0.75                                        | 0.095997              | 0.032775              |
| 0.44                                        | 0.003663              | 0.000794              | 0.76                                        | 0.101318              | 0.034961              |
| 0.45                                        | 0.004428              | 0.000979              | 0.77                                        | 0.106748              | 0.037221              |
| 0.46                                        | 0.005304              | 0.001196              | 0.78                                        | 0.112282              | 0.039554              |
| 0.47                                        | 0.006296              | 0.001447              | 0.79                                        | 0.117915              | 0.041960              |
| 0.48                                        | 0.007414              | 0.001736              | 0.80                                        | 0.123641              | 0.044436              |
| 0.49                                        | 0.008663              | 0.002066              | 0.81                                        | 0.129455              | 0.046983              |
| 0.50                                        | 0.010050              | 0.002439              | 0.82                                        | 0.135351              | 0.049597              |
| 0.51                                        | 0.011581              | 0.002860              | 0.83                                        | 0.141325              | 0.052278              |

Table 3b. Normalized cumulative blackbody functions for radiant power,  $\eta_R^t(\lambda_n)$ , and quantum flux,  $\eta_Q^t(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^t(\lambda_n)$ | $\eta_Q^t(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^t(\lambda_n)$ | $\eta_Q^t(\lambda_n)$ |
|---------------------------------------------|-----------------------|-----------------------|---------------------------------------------|-----------------------|-----------------------|
| 0.84                                        | 0.147371              | 0.055025              | 1.80                                        | 0.659803              | 0.408282              |
| 0.85                                        | 0.153484              | 0.057835              | 1.85                                        | 0.676094              | 0.424454              |
| 0.86                                        | 0.159660              | 0.060708              | 1.90                                        | 0.691479              | 0.440145              |
| 0.87                                        | 0.165892              | 0.063641              | 1.95                                        | 0.706005              | 0.455356              |
| 0.88                                        | 0.172177              | 0.066632              | 2.00                                        | 0.719722              | 0.470093              |
| 0.89                                        | 0.178509              | 0.069681              | 2.10                                        | 0.744910              | 0.498171              |
| 0.90                                        | 0.184884              | 0.072785              | 2.20                                        | 0.767388              | 0.524451              |
| 0.91                                        | 0.191297              | 0.075943              | 2.30                                        | 0.787470              | 0.549023              |
| 0.92                                        | 0.197744              | 0.079152              | 2.40                                        | 0.805438              | 0.571986              |
| 0.93                                        | 0.204221              | 0.082411              | 2.50                                        | 0.821540              | 0.593439              |
| 0.94                                        | 0.210723              | 0.085719              | 2.60                                        | 0.835994              | 0.613484              |
| 0.95                                        | 0.217247              | 0.089073              | 2.70                                        | 0.848933              | 0.632219              |
| 0.96                                        | 0.223788              | 0.092471              | 2.80                                        | 0.860706              | 0.649736              |
| 0.97                                        | 0.230343              | 0.095913              | 2.90                                        | 0.871279              | 0.666126              |
| 0.98                                        | 0.236908              | 0.099395              | 3.00                                        | 0.880843              | 0.681470              |
| 0.99                                        | 0.243480              | 0.102916              | 3.50                                        | 0.917012              | 0.745037              |
| 1.00                                        | 0.250055              | 0.106476              | 4.00                                        | 0.940098              | 0.791913              |
| 1.05                                        | 0.282870              | 0.124774              | 4.50                                        | 0.955443              | 0.827256              |
| 1.10                                        | 0.315334              | 0.143759              | 5.00                                        | 0.966005              | 0.854464              |
| 1.15                                        | 0.347166              | 0.163239              | 5.50                                        | 0.973497              | 0.875807              |
| 1.20                                        | 0.378149              | 0.183042              | 6.00                                        | 0.978951              | 0.892832              |
| 1.25                                        | 0.408125              | 0.203017              | 6.50                                        | 0.983013              | 0.906616              |
| 1.30                                        | 0.436984              | 0.223033              | 7.00                                        | 0.986097              | 0.917923              |
| 1.35                                        | 0.464655              | 0.242976              | 7.50                                        | 0.988480              | 0.927309              |
| 1.40                                        | 0.491099              | 0.262755              | 8.00                                        | 0.990350              | 0.935182              |
| 1.45                                        | 0.516301              | 0.282289              | 8.50                                        | 0.991837              | 0.941849              |
| 1.50                                        | 0.540266              | 0.301517              | 9.00                                        | 0.993034              | 0.947542              |
| 1.55                                        | 0.563014              | 0.320387              | 9.50                                        | 0.994008              | 0.952442              |
| 1.60                                        | 0.584576              | 0.338860              | 10.00                                       | 0.994810              | 0.956689              |
| 1.65                                        | 0.604990              | 0.356905              | 20.00                                       | 0.999285              | 0.988210              |
| 1.70                                        | 0.624301              | 0.374500              | 100.00                                      | 0.999994              | 0.999496              |
| 1.75                                        | 0.642556              | 0.391628              | 140.00                                      | 0.999998              | 0.999741              |

Table 4a. Cumulative blackbody peak radiation weight factor for  
radiant power,  $\eta_R^{\text{tt}}(\lambda_n)$ , and quantum flux,  $\eta_Q^{\text{tt}}(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{\text{opt}}}$ | $\eta_R^{\text{tt}}(\lambda_n)$ | $\eta_Q^{\text{tt}}(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{\text{opt}}}$ | $\eta_R^{\text{tt}}(\lambda_n)$ | $\eta_Q^{\text{tt}}(\lambda_n)$ |
|----------------------------------------------------|---------------------------------|---------------------------------|----------------------------------------------------|---------------------------------|---------------------------------|
| 0.20                                               | 0.000000                        | 0.000000                        | 0.52                                               | 0.053028                        | 0.031282                        |
| 0.21                                               | 0.000000                        | 0.000000                        | 0.53                                               | 0.060359                        | 0.036200                        |
| 0.22                                               | 0.000001                        | 0.000000                        | 0.54                                               | 0.068319                        | 0.041642                        |
| 0.23                                               | 0.000003                        | 0.000001                        | 0.55                                               | 0.076923                        | 0.047634                        |
| 0.24                                               | 0.000007                        | 0.000002                        | 0.56                                               | 0.086181                        | 0.054200                        |
| 0.25                                               | 0.000013                        | 0.000004                        | 0.57                                               | 0.096101                        | 0.061362                        |
| 0.26                                               | 0.000026                        | 0.000008                        | 0.58                                               | 0.106688                        | 0.069140                        |
| 0.27                                               | 0.000047                        | 0.000015                        | 0.59                                               | 0.117945                        | 0.077556                        |
| 0.28                                               | 0.000081                        | 0.000027                        | 0.60                                               | 0.129874                        | 0.086625                        |
| 0.29                                               | 0.000136                        | 0.000047                        | 0.61                                               | 0.142473                        | 0.096365                        |
| 0.30                                               | 0.000218                        | 0.000078                        | 0.62                                               | 0.155738                        | 0.106789                        |
| 0.31                                               | 0.000339                        | 0.000126                        | 0.63                                               | 0.169662                        | 0.117909                        |
| 0.32                                               | 0.000512                        | 0.000195                        | 0.64                                               | 0.184239                        | 0.129737                        |
| 0.33                                               | 0.000752                        | 0.000295                        | 0.65                                               | 0.199459                        | 0.142280                        |
| 0.34                                               | 0.001078                        | 0.000434                        | 0.66                                               | 0.215310                        | 0.155547                        |
| 0.35                                               | 0.001509                        | 0.000625                        | 0.67                                               | 0.231780                        | 0.169542                        |
| 0.36                                               | 0.002070                        | 0.000879                        | 0.68                                               | 0.248855                        | 0.184268                        |
| 0.37                                               | 0.002785                        | 0.001213                        | 0.69                                               | 0.266519                        | 0.199729                        |
| 0.38                                               | 0.003684                        | 0.001644                        | 0.70                                               | 0.284755                        | 0.215923                        |
| 0.39                                               | 0.004794                        | 0.002190                        | 0.71                                               | 0.303547                        | 0.232851                        |
| 0.40                                               | 0.006148                        | 0.002874                        | 0.72                                               | 0.322875                        | 0.250509                        |
| 0.41                                               | 0.007777                        | 0.003717                        | 0.73                                               | 0.342721                        | 0.268893                        |
| 0.42                                               | 0.009715                        | 0.004745                        | 0.74                                               | 0.363065                        | 0.287999                        |
| 0.43                                               | 0.011994                        | 0.005983                        | 0.75                                               | 0.383887                        | 0.307820                        |
| 0.44                                               | 0.014648                        | 0.007458                        | 0.76                                               | 0.405166                        | 0.328347                        |
| 0.45                                               | 0.017709                        | 0.009199                        | 0.77                                               | 0.426882                        | 0.349574                        |
| 0.46                                               | 0.021209                        | 0.011235                        | 0.78                                               | 0.449013                        | 0.371488                        |
| 0.47                                               | 0.025179                        | 0.013594                        | 0.79                                               | 0.471537                        | 0.394081                        |
| 0.48                                               | 0.029648                        | 0.016307                        | 0.80                                               | 0.494435                        | 0.417341                        |
| 0.49                                               | 0.034643                        | 0.019402                        | 0.81                                               | 0.517685                        | 0.441254                        |
| 0.50                                               | 0.040190                        | 0.022911                        | 0.82                                               | 0.541265                        | 0.465809                        |
| 0.51                                               | 0.046311                        | 0.026861                        | 0.83                                               | 0.565154                        | 0.490991                        |

Table 4b. Cumulative blackbody peak radiation weight factor for  
radiant power,  $\eta_R^t(\lambda_n)$ , and quantum flux,  $\eta_Q^t(\lambda_n)$ .

| $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^t(\lambda_n)$ | $\eta_Q^t(\lambda_n)$ | $\lambda_n = \frac{\lambda}{\lambda_{opt}}$ | $\eta_R^t(\lambda_n)$ | $\eta_Q^t(\lambda_n)$ |
|---------------------------------------------|-----------------------|-----------------------|---------------------------------------------|-----------------------|-----------------------|
| 0.84                                        | 0.589332              | 0.516787              | 1.80                                        | 2.638531              | 3.834533              |
| 0.85                                        | 0.613779              | 0.543181              | 1.85                                        | 2.703678              | 3.986424              |
| 0.86                                        | 0.638474              | 0.570159              | 1.90                                        | 2.765199              | 4.133791              |
| 0.87                                        | 0.663397              | 0.597704              | 1.95                                        | 2.823291              | 4.276653              |
| 0.88                                        | 0.688529              | 0.625802              | 2.00                                        | 2.878144              | 4.415056              |
| 0.89                                        | 0.713851              | 0.654435              | 2.10                                        | 2.978867              | 4.678758              |
| 0.90                                        | 0.739344              | 0.683588              | 2.20                                        | 3.068757              | 4.925580              |
| 0.91                                        | 0.764991              | 0.713244              | 2.30                                        | 3.149067              | 5.156363              |
| 0.92                                        | 0.790773              | 0.743386              | 2.40                                        | 3.220920              | 5.372023              |
| 0.93                                        | 0.816674              | 0.773997              | 2.50                                        | 3.285309              | 5.573510              |
| 0.94                                        | 0.842676              | 0.805061              | 2.60                                        | 3.343110              | 5.761770              |
| 0.95                                        | 0.868764              | 0.836560              | 2.70                                        | 3.395093              | 5.937721              |
| 0.96                                        | 0.894922              | 0.868479              | 2.80                                        | 3.441932              | 6.102244              |
| 0.97                                        | 0.921135              | 0.900799              | 2.90                                        | 3.484215              | 6.256171              |
| 0.98                                        | 0.947389              | 0.933505              | 3.00                                        | 3.522460              | 6.400283              |
| 0.99                                        | 0.973669              | 0.966579              | 3.50                                        | 3.667098              | 6.997295              |
| 1.00                                        | 0.999962              | 1.000006              | 4.00                                        | 3.759420              | 7.437552              |
| 1.05                                        | 1.131186              | 1.171859              | 4.50                                        | 3.820782              | 7.769492              |
| 1.10                                        | 1.261010              | 1.350165              | 5.00                                        | 3.863018              | 8.025027              |
| 1.15                                        | 1.388303              | 1.533121              | 5.50                                        | 3.892979              | 8.225478              |
| 1.20                                        | 1.512203              | 1.719113              | 6.00                                        | 3.914791              | 8.385373              |
| 1.25                                        | 1.632077              | 1.906715              | 6.50                                        | 3.931033              | 8.514825              |
| 1.30                                        | 1.747484              | 2.094697              | 7.00                                        | 3.943366              | 8.621023              |
| 1.35                                        | 1.858140              | 2.282006              | 7.50                                        | 3.952896              | 8.709174              |
| 1.40                                        | 1.963887              | 2.467760              | 8.00                                        | 3.960373              | 8.783117              |
| 1.45                                        | 2.064668              | 2.651228              | 8.50                                        | 3.966320              | 8.845731              |
| 1.50                                        | 2.160503              | 2.831813              | 9.00                                        | 3.971108              | 8.899204              |
| 1.55                                        | 2.251472              | 3.009040              | 9.50                                        | 3.975005              | 8.945225              |
| 1.60                                        | 2.337698              | 3.182534              | 10.00                                       | 3.978209              | 8.985111              |
| 1.65                                        | 2.419334              | 3.352009              | 20.00                                       | 3.996107              | 9.281150              |
| 1.70                                        | 2.496558              | 3.517256              | 100.00                                      | 3.998940              | 9.387144              |
| 1.75                                        | 2.569557              | 3.678127              | 140.00                                      | 3.998956              | 9.389452              |

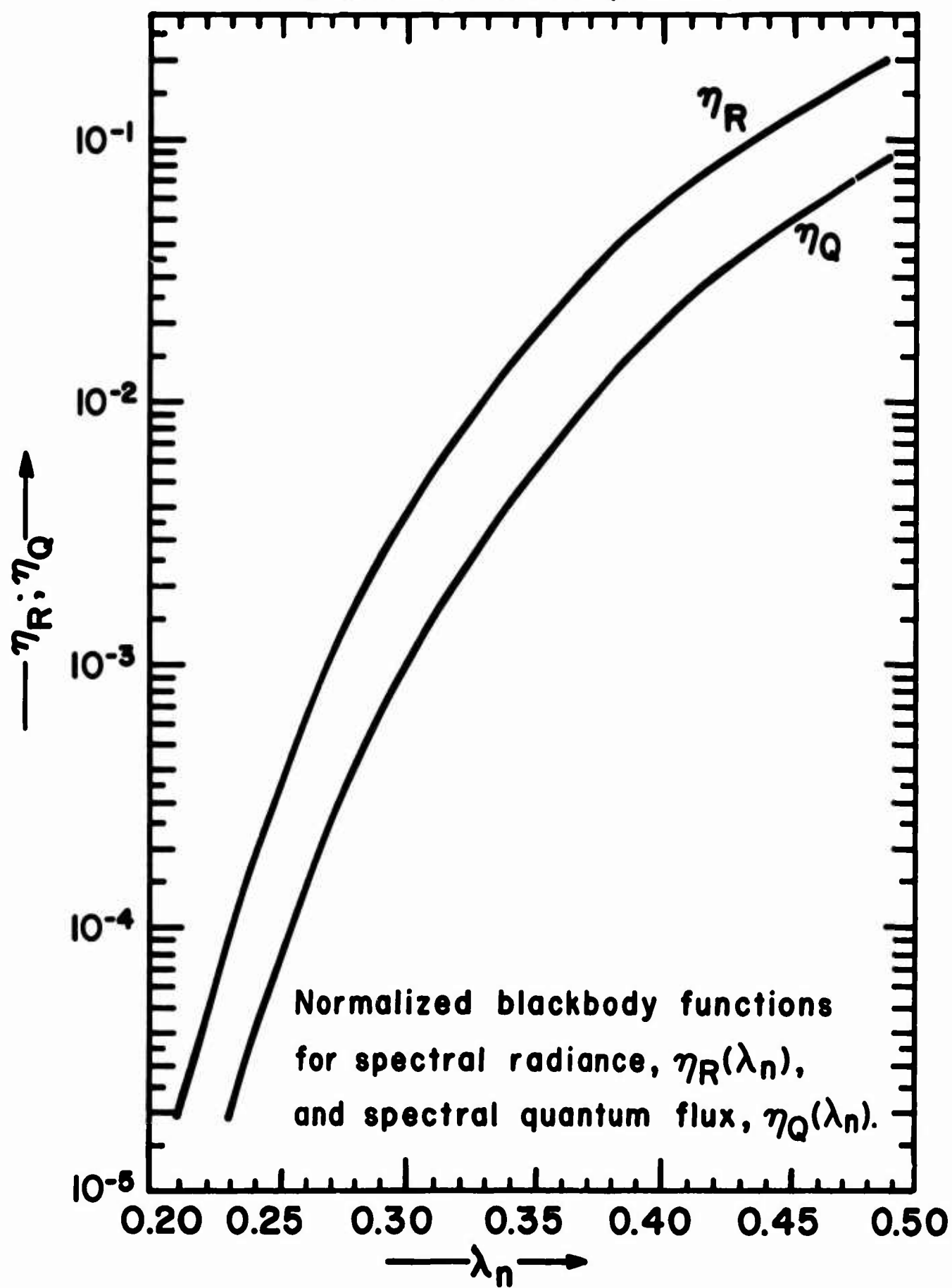


Fig. 1a

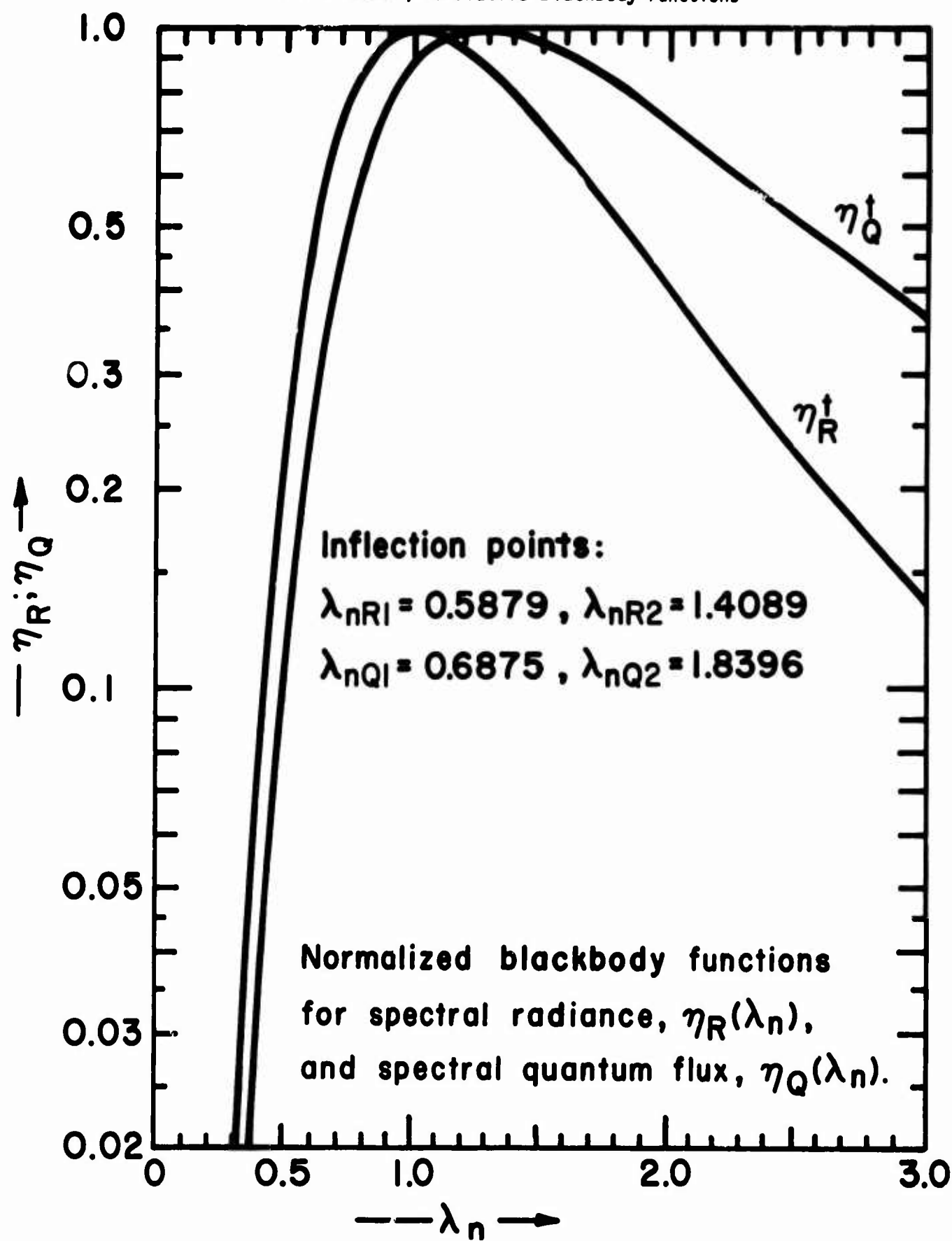


Fig.1b

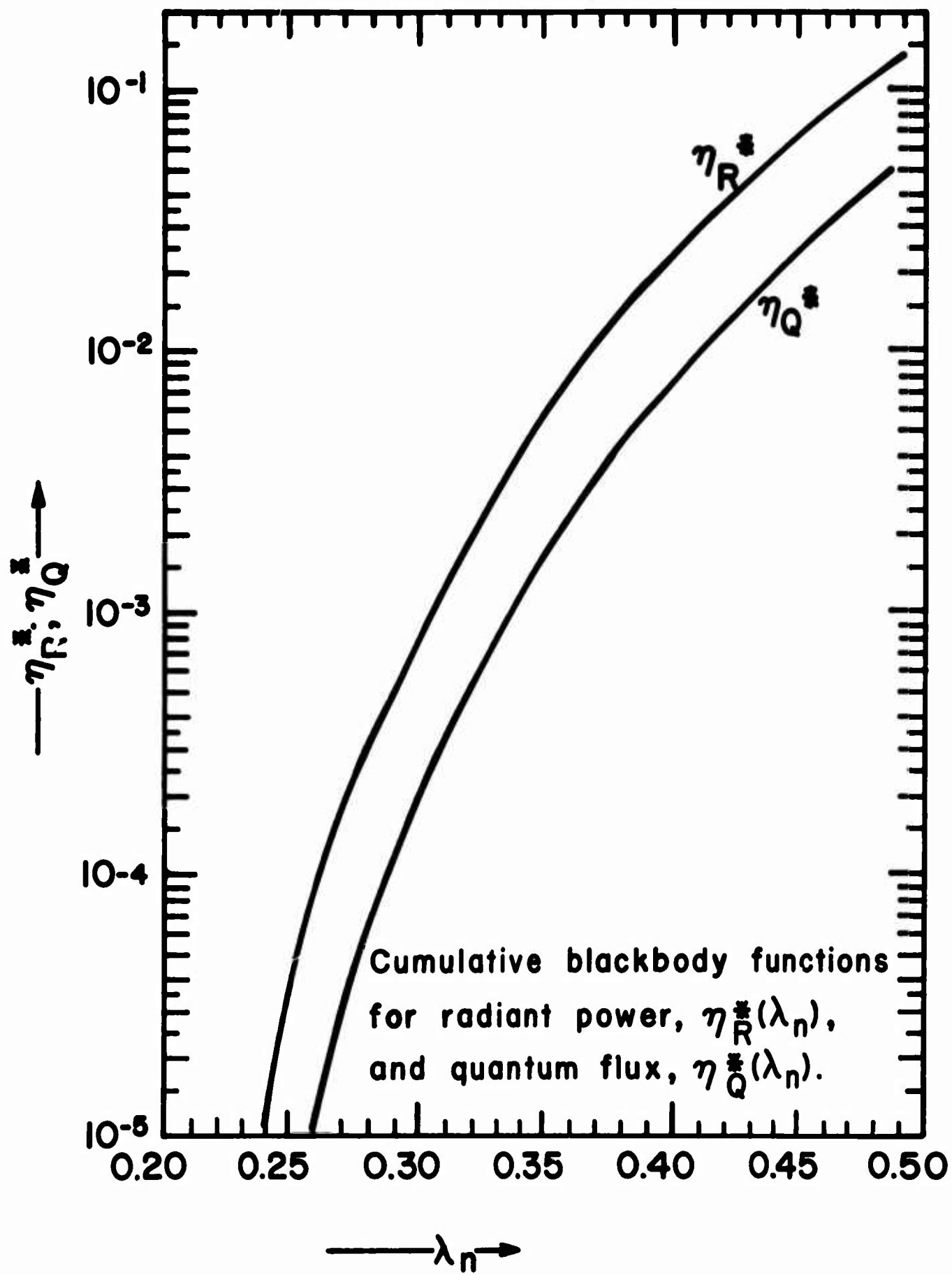


Fig. 2a

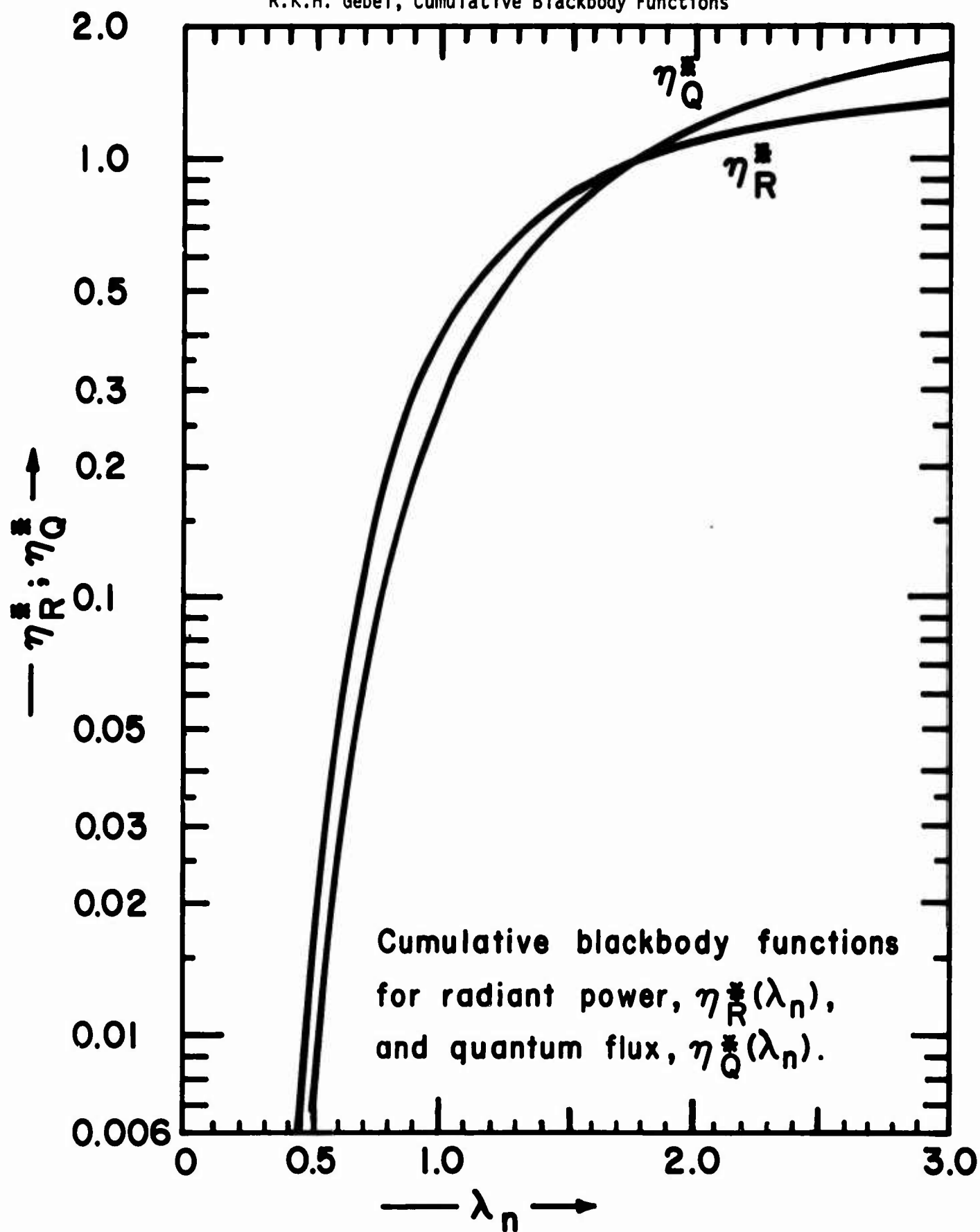


Fig. 2b

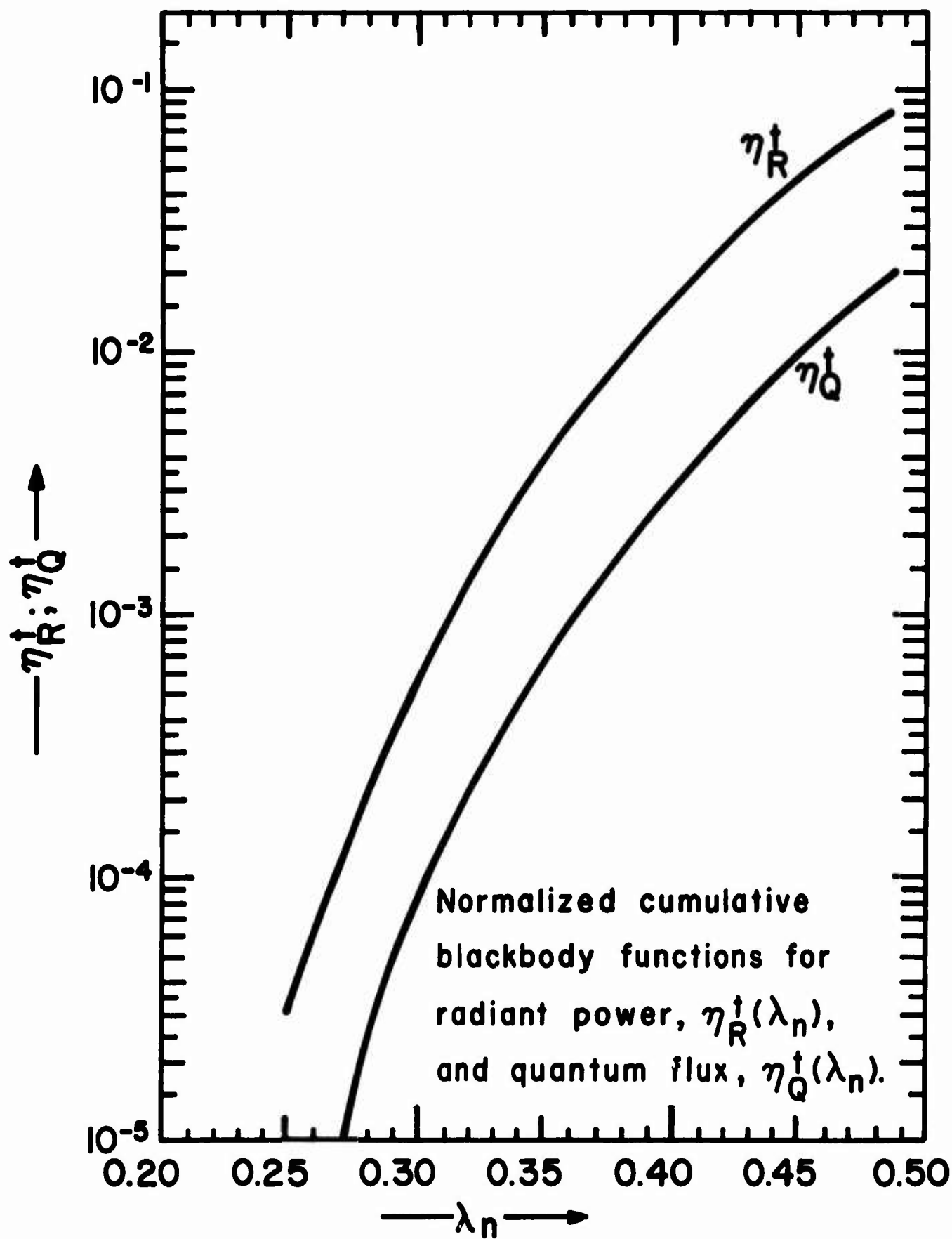


Fig. 3a

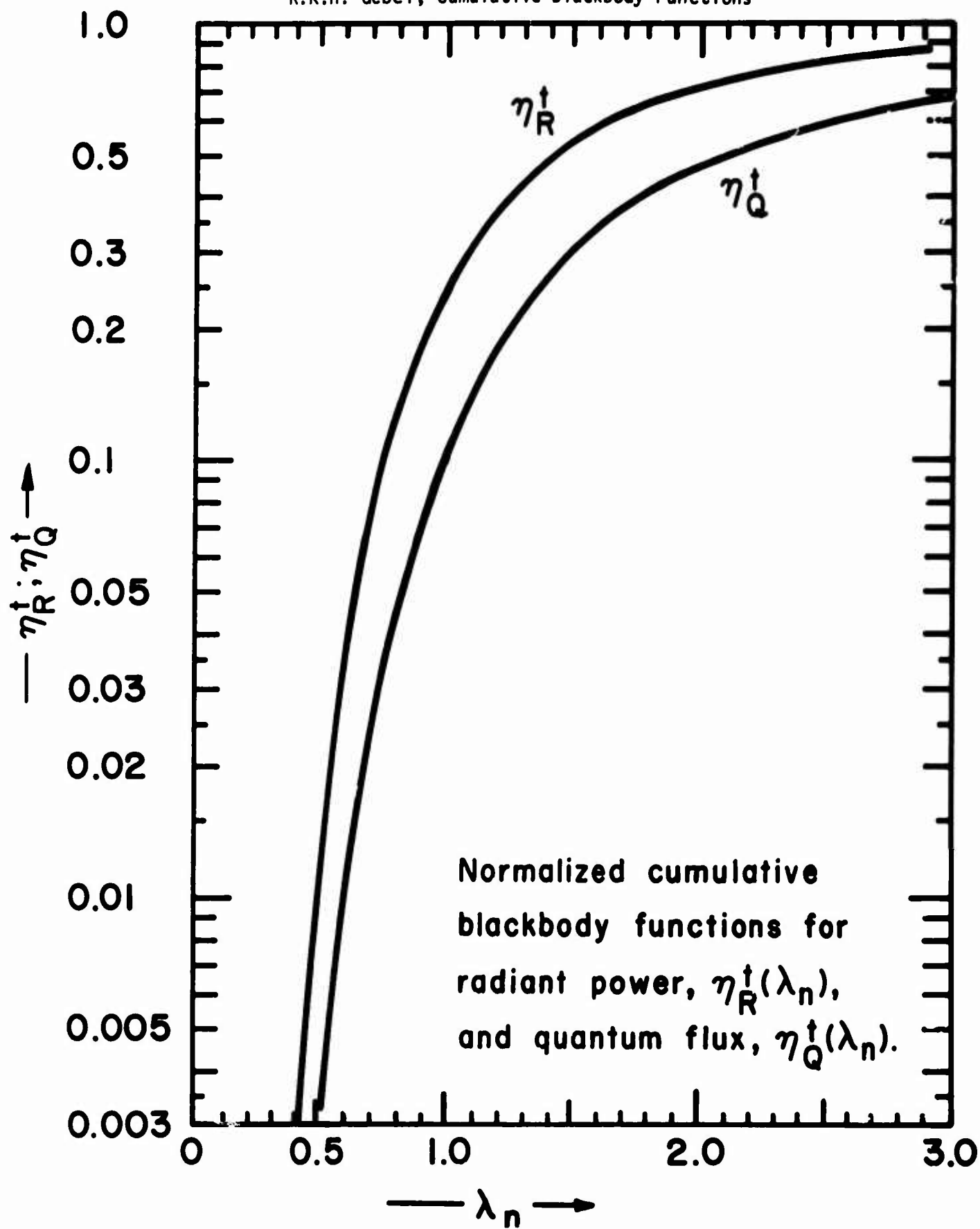


Fig. 3b

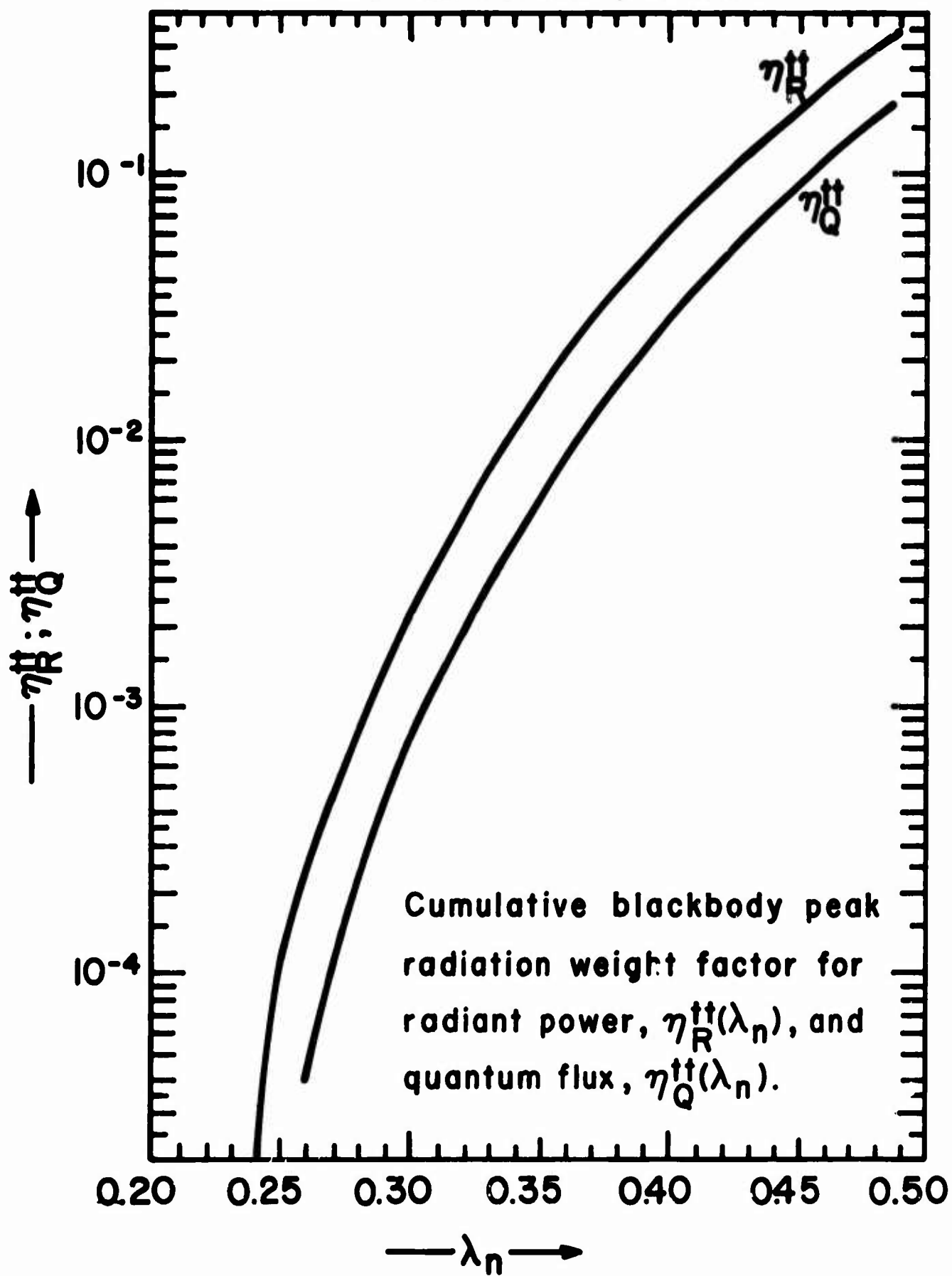


Fig. 4a

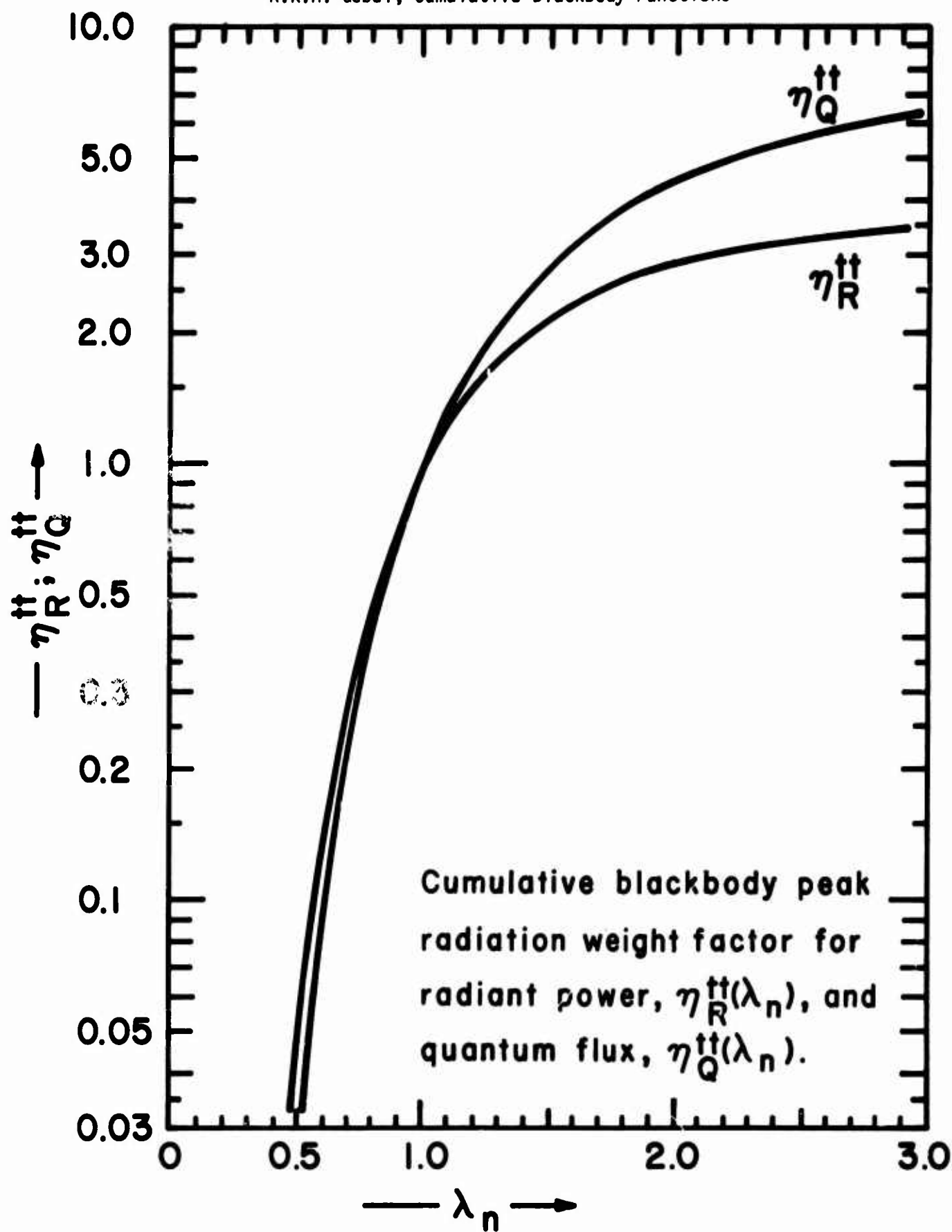


Fig. 4b

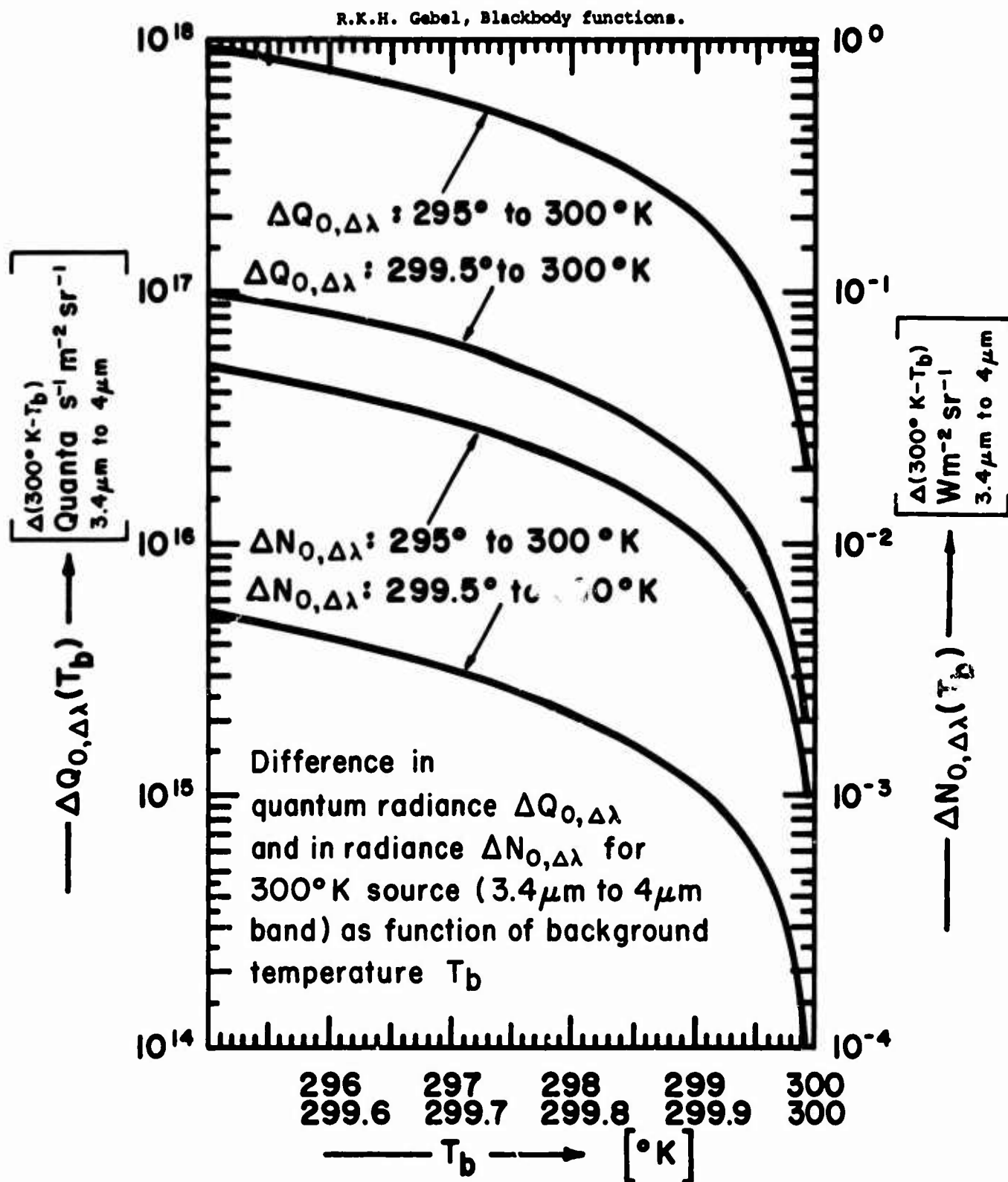


Fig. 5

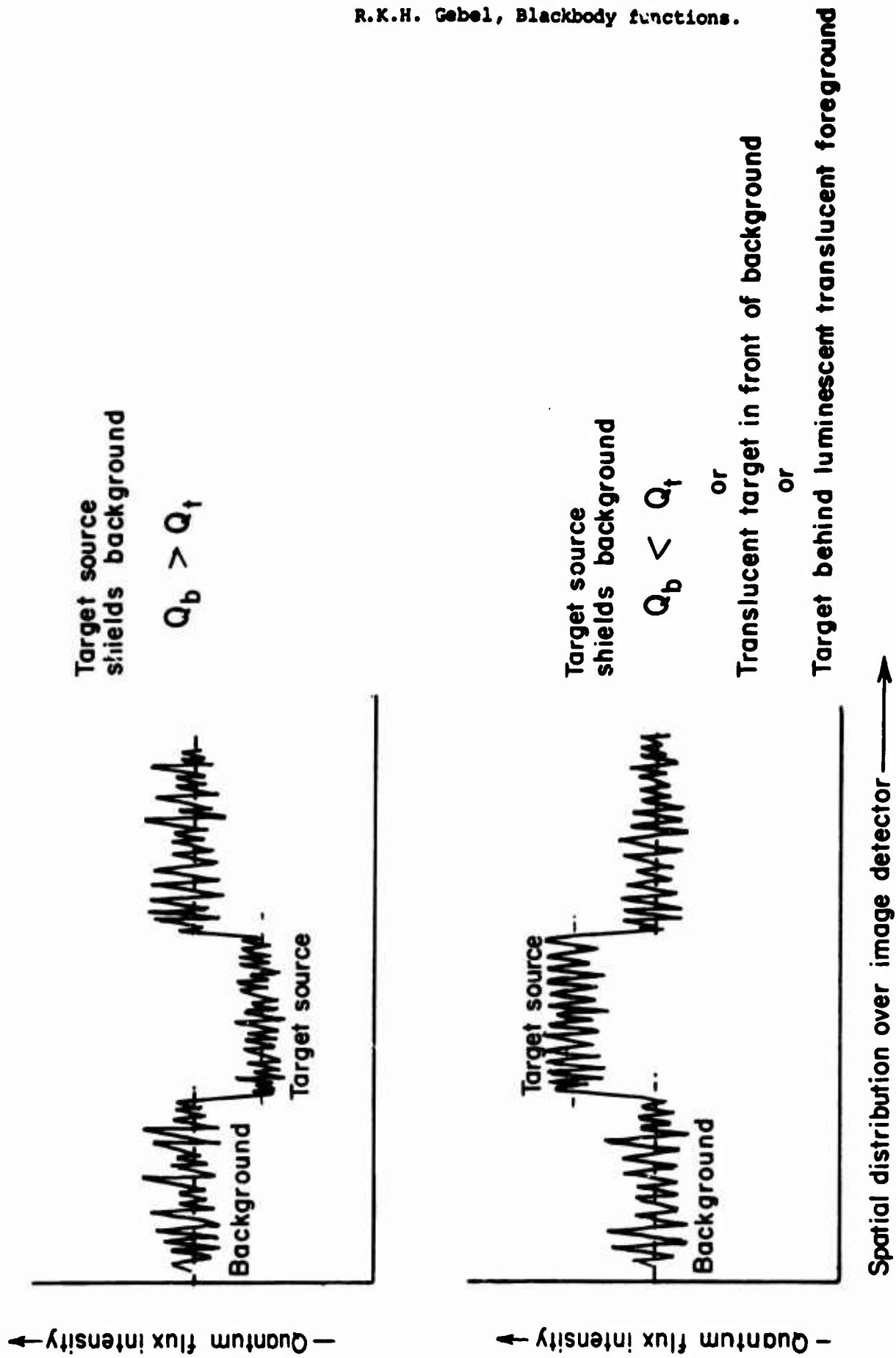


**Fig. 6** Video signal of a line sequential scanning system showing different target source - background situations.

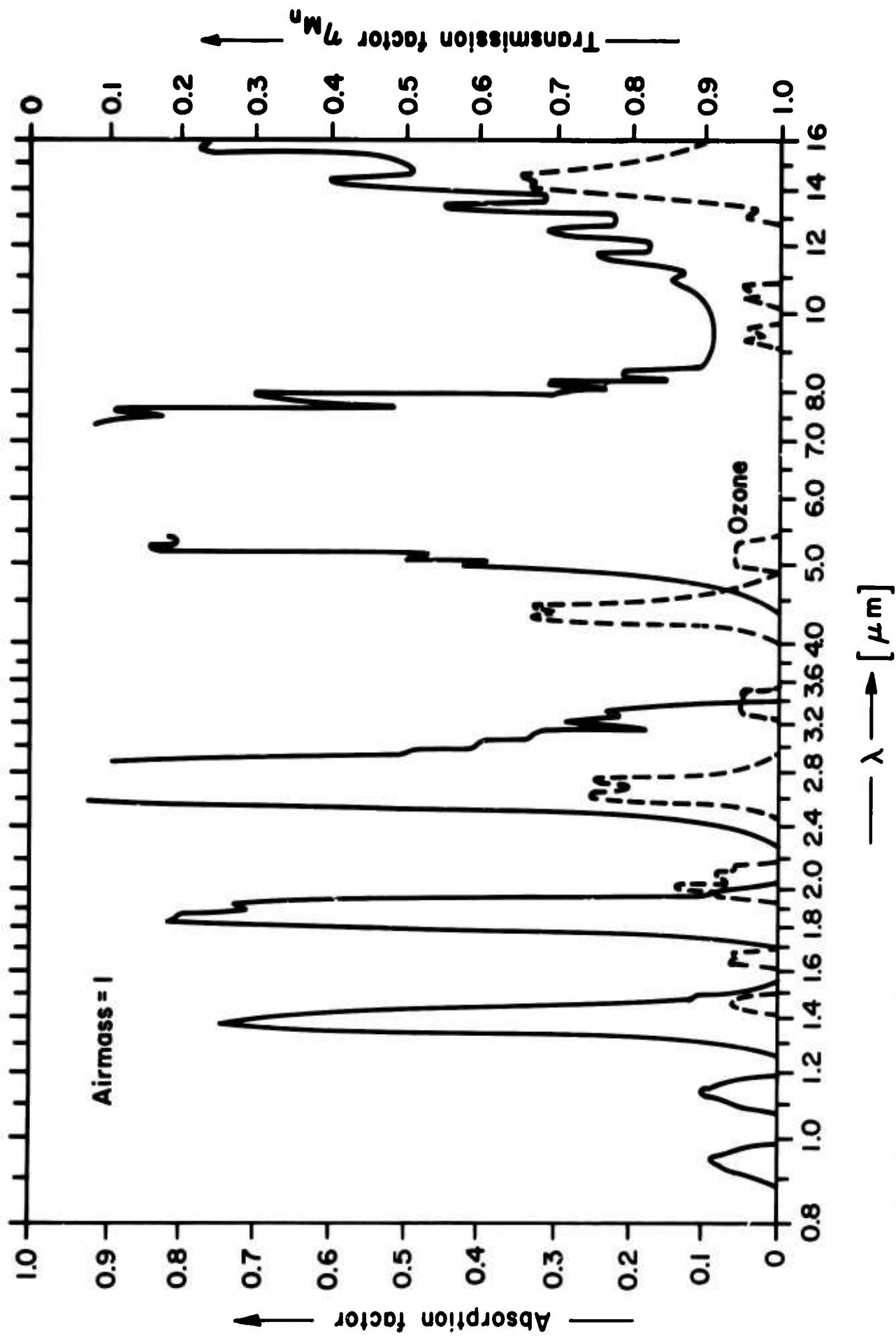


Fig. 7 Absorption factor and transmission factor  $\eta_{M_n}$  for normalized airmass.

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.100       |                       |                                                 |                       |                                                 |
| 0.101       | 0.                    | 0.                                              | 0.                    | 0.                                              |
| 0.102       | 0.                    | 0.                                              | 0.                    | 0.                                              |
| 0.103       | 0.                    | 0.                                              | 0.                    | 0.                                              |
| 0.104       | 0.                    | 0.                                              | 0.                    | 0.                                              |
| 0.105       | 0.                    | 0.                                              | 0.                    | 0.                                              |
| 0.106       | 6.838518E-17          | 6.838518E-17                                    | 0.                    | 0.                                              |
| 0.107       | 6.838518E-17          | 0.                                              | 0.                    | 0.                                              |
| 0.108       | 1.367704E-16          | 6.838518E-17                                    | 0.                    | 0.                                              |
| 0.109       | 2.051555E-16          | 6.838518E-17                                    | 0.                    | 0.                                              |
| 0.110       | 3.419259E-16          | 1.367704E-16                                    | 0.                    | 0.                                              |
| 0.111       | 5.470814E-16          | 2.051555E-16                                    | 0.                    | 0.                                              |
| 0.112       | 7.522370E-16          | 2.051555E-16                                    | 0.                    | 0.                                              |
| 0.113       | 1.094163E-15          | 3.419259E-16                                    | 0.                    | 0.                                              |
| 0.114       | 1.641244E-15          | 5.470814E-16                                    | 9.236027E-17          | 9.236027E-17                                    |
| 0.115       | 2.325096E-15          | 6.838518E-16                                    | 9.236027E-17          | 0.                                              |
| 0.116       | 3.282489E-15          | 9.573925E-16                                    | 1.847205E-16          | 9.236027E-17                                    |
| 0.117       | 4.650192E-15          | 1.367704E-15                                    | 2.770808E-16          | 9.236027E-17                                    |
| 0.118       | 6.496592E-15          | 1.846400E-15                                    | 3.694411E-16          | 9.236027E-17                                    |
| 0.119       | 9.095229E-15          | 2.598637E-15                                    | 5.541616E-16          | 1.847205E-16                                    |
| 0.120       | 1.258287E-14          | 3.487644E-15                                    | 7.388822E-16          | 1.847205E-16                                    |
| 0.121       | 1.730145E-14          | 4.718577E-15                                    | 1.108323E-15          | 3.694411E-16                                    |
| 0.122       | 2.359289E-14          | 6.291436E-15                                    | 1.477764E-15          | 3.694411E-16                                    |
| 0.123       | 3.214103E-14          | 8.548147E-15                                    | 2.031926E-15          | 5.541616E-16                                    |
| 0.124       | 4.342459E-14          | 1.128355E-14                                    | 2.770808E-15          | 7.388822E-16                                    |
| 0.125       | 5.846933E-14          | 1.504474E-14                                    | 3.786771E-15          | 1.015963E-15                                    |
| 0.126       | 7.830103E-14          | 1.983170E-14                                    | 5.172175E-15          | 1.385404E-15                                    |
| 0.127       | 1.043558E-13          | 2.605475E-14                                    | 7.019381E-15          | 1.847205E-15                                    |
| 0.128       | 1.384800E-13          | 3.412420E-14                                    | 9.328387E-15          | 2.309007E-15                                    |
| 0.129       | 1.827936E-13          | 4.431360E-14                                    | 1.246864E-14          | 3.140249E-15                                    |
| 0.130       | 2.403739E-13          | 5.758032E-14                                    | 1.653249E-14          | 4.063852E-15                                    |
| 0.131       | 3.145718E-13          | 7.419792E-14                                    | 2.179702E-14          | 5.264535E-15                                    |
| 0.132       | 4.100375E-13          | 9.546571E-14                                    | 2.863168E-14          | 6.834660E-15                                    |
| 0.133       | 5.322418E-13          | 1.222043E-13                                    | 3.740591E-14          | 8.774226E-15                                    |
| 0.134       | 6.880233E-13          | 1.557814E-13                                    | 4.876622E-14          | 1.136031E-14                                    |
| 0.135       | 8.859300E-13          | 1.979067E-13                                    | 6.317443E-14          | 1.440820E-14                                    |
| 0.136       | 1.136357E-12          | 2.504265E-13                                    | 8.164648E-14          | 1.847205E-14                                    |
| 0.137       | 1.452023E-12          | 3.156660E-13                                    | 1.051060E-13          | 2.345951E-14                                    |
| 0.138       | 1.848451E-12          | 3.964289E-13                                    | 1.347536E-13          | 2.964765E-14                                    |
| 0.139       | 2.344723E-12          | 4.962712E-13                                    | 1.721595E-13          | 3.740591E-14                                    |
| 0.140       | 2.963677E-12          | 6.189543E-13                                    | 2.191709E-13          | 4.701138E-14                                    |
| 0.141       | 3.733010E-12          | 7.693333E-13                                    | 2.780044E-13          | 5.883349E-14                                    |
| 0.142       | 4.686231E-12          | 9.532210E-13                                    | 3.513385E-13          | 7.333405E-14                                    |
| 0.143       | 5.863277E-12          | 1.177046E-12                                    | 4.425904E-13          | 9.125195E-14                                    |
| 0.144       | 7.312222E-12          | 1.448945E-12                                    | 5.557317E-13          | 1.131413E-13                                    |
| 0.145       | 9.090168E-12          | 1.777946E-12                                    | 6.955652E-13          | 1.398334E-13                                    |
| 0.146       | 1.126536E-11          | 2.175196E-12                                    | 8.677247E-13          | 1.721595E-13                                    |
| 0.147       | 1.391850E-11          | 2.653140E-12                                    | 1.079230E-12          | 2.115050E-13                                    |
| 0.148       | 1.714526E-11          | 3.226755E-12                                    | 1.338208E-12          | 2.589782E-13                                    |
| 0.149       | 2.105826E-11          | 3.913000E-12                                    | 1.654357E-12          | 3.161492E-13                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.150       | 2.579038E-11          | 4.732118E-12                                    | 2.039222E-12          | 3.848652E-13                                    |
| 0.151       | 3.149719E-11          | 5.706812E-12                                    | 2.506565E-12          | 4.673430E-13                                    |
| 0.152       | 3.836108E-11          | 6.863889E-12                                    | 3.072364E-12          | 5.657990E-13                                    |
| 0.153       | 4.659486E-11          | 8.233781E-12                                    | 3.755553E-12          | 6.831889E-13                                    |
| 0.154       | 5.644649E-11          | 9.851637E-12                                    | 4.578299E-12          | 8.227453E-13                                    |
| 0.155       | 6.820396E-11          | 1.175746E-11                                    | 5.566646E-12          | 9.883473E-13                                    |
| 0.156       | 8.220131E-11          | 1.399735E-11                                    | 6.750889E-12          | 1.184243E-12                                    |
| 0.157       | 9.882465E-11          | 1.662334E-11                                    | 8.166310E-12          | 1.415421E-12                                    |
| 0.158       | 1.185196E-10          | 1.969493E-11                                    | 9.854010E-12          | 1.687699E-12                                    |
| 0.159       | 1.417993E-10          | 2.327968E-11                                    | 1.186164E-11          | 2.007635E-12                                    |
| 0.160       | 1.692530E-10          | 2.745371E-11                                    | 1.424408E-11          | 2.382433E-12                                    |
| 0.161       | 2.015565E-10          | 3.230352E-11                                    | 1.706495E-11          | 2.820867E-12                                    |
| 0.162       | 2.394827E-10          | 3.792621E-11                                    | 2.039749E-11          | 3.332543E-12                                    |
| 0.163       | 2.839140E-10          | 4.443129E-11                                    | 2.432576E-11          | 3.928267E-12                                    |
| 0.164       | 3.358556E-10          | 5.194162E-11                                    | 2.894626E-11          | 4.620507E-12                                    |
| 0.165       | 3.964506E-10          | 6.059501E-11                                    | 3.436957E-11          | 5.423303E-12                                    |
| 0.166       | 4.669964E-10          | 7.054574E-11                                    | 4.072174E-11          | 6.352170E-12                                    |
| 0.167       | 5.489621E-10          | 8.196572E-11                                    | 4.814686E-11          | 7.425119E-12                                    |
| 0.168       | 6.440091E-10          | 9.504699E-11                                    | 5.680868E-11          | 8.661823E-12                                    |
| 0.169       | 7.540120E-10          | 1.100029E-10                                    | 6.689331E-11          | 1.008463E-11                                    |
| 0.170       | 8.810827E-10          | 1.270707E-10                                    | 7.861180E-11          | 1.171849E-11                                    |
| 0.171       | 1.027596E-09          | 1.465132E-10                                    | 9.220289E-11          | 1.359109E-11                                    |
| 0.172       | 1.196218E-09          | 1.686216E-10                                    | 1.079366E-10          | 1.573376E-11                                    |
| 0.173       | 1.389935E-09          | 1.937174E-10                                    | 1.261173E-10          | 1.818066E-11                                    |
| 0.174       | 1.612090E-09          | 2.221555E-10                                    | 1.470879E-10          | 2.097058E-11                                    |
| 0.175       | 1.866417E-09          | 2.543268E-10                                    | 1.712335E-10          | 2.414565E-11                                    |
| 0.176       | 2.157078E-09          | 2.906612E-10                                    | 1.989869E-10          | 2.775334E-11                                    |
| 0.177       | 2.488709E-09          | 3.316308E-10                                    | 2.308326E-10          | 3.184573E-11                                    |
| 0.178       | 2.866463E-09          | 3.777534E-10                                    | 2.673128E-10          | 3.648018E-11                                    |
| 0.179       | 3.296058E-09          | 4.295954E-10                                    | 3.090332E-10          | 4.172043E-11                                    |
| 0.180       | 3.783835E-09          | 4.877766E-10                                    | 3.566692E-10          | 4.763601E-11                                    |
| 0.181       | 4.336808E-09          | 5.529734E-10                                    | 4.109731E-10          | 5.430387E-11                                    |
| 0.182       | 4.967731E-09          | 6.259232E-10                                    | 4.727813E-10          | 6.180823E-11                                    |
| 0.183       | 5.670160E-09          | 7.074285E-10                                    | 5.430229E-10          | 7.024156E-11                                    |
| 0.184       | 6.468522E-09          | 7.983622E-10                                    | 6.227276E-10          | 7.970470E-11                                    |
| 0.185       | 7.368194E-09          | 8.996116E-10                                    | 7.130360E-10          | 9.030839E-11                                    |
| 0.186       | 8.380578E-09          | 1.012384E-09                                    | 8.152091E-10          | 1.021731E-10                                    |
| 0.187       | 9.518190E-09          | 1.137612E-09                                    | 9.306394E-10          | 1.154303E-10                                    |
| 0.188       | 1.079475E-08          | 1.276559E-09                                    | 1.060863E-09          | 1.302234E-10                                    |
| 0.189       | 1.222527E-08          | 1.430525E-09                                    | 1.207570E-09          | 1.467076E-10                                    |
| 0.190       | 1.382618E-08          | 1.600911E-09                                    | 1.372623E-09          | 1.650524E-10                                    |
| 0.191       | 1.561541E-08          | 1.789228E-09                                    | 1.558064E-09          | 1.854410E-10                                    |
| 0.192       | 1.761251E-08          | 1.997102E-09                                    | 1.766136E-09          | 2.080723E-10                                    |
| 0.193       | 1.983880E-08          | 2.226282E-09                                    | 1.999297E-09          | 2.331608E-10                                    |
| 0.194       | 2.231744E-08          | 2.478645E-09                                    | 2.260236E-09          | 2.609394E-10                                    |
| 0.195       | 2.507365E-08          | 2.756203E-09                                    | 2.551895E-09          | 2.916586E-10                                    |
| 0.196       | 2.813476E-08          | 3.061114E-09                                    | 2.877484E-09          | 3.255892E-10                                    |
| 0.197       | 3.153045E-08          | 3.395687E-09                                    | 3.240507E-09          | 3.630224E-10                                    |
| 0.198       | 3.529283E-08          | 3.762388E-09                                    | 3.644779E-09          | 4.042721E-10                                    |
| 0.199       | 3.945669E-08          | 4.163854E-09                                    | 4.094454E-09          | 4.496750E-10                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.200       | 4.405959E-08          | 4.602897E-09                                    | 4.594047E-09          | 4.995933E-10                                    |
| 0.201       | 4.914210E-08          | 5.082514E-09                                    | 5.148462E-09          | 5.544151E-10                                    |
| 0.202       | 5.474799E-08          | 5.605894E-09                                    | 5.763018E-09          | 6.145564E-10                                    |
| 0.203       | 6.092442E-08          | 6.176431E-09                                    | 6.443481E-09          | 6.804624E-10                                    |
| 0.204       | 6.772216E-08          | 6.797732E-09                                    | 7.196090E-09          | 7.526096E-10                                    |
| 0.205       | 7.519578E-08          | 7.473623E-09                                    | 8.027596E-09          | 8.315062E-10                                    |
| 0.206       | 8.340394E-08          | 8.208166E-09                                    | 8.945292E-09          | 9.176957E-10                                    |
| 0.207       | 9.240961E-08          | 9.005661E-09                                    | 9.957049E-09          | 1.011757E-09                                    |
| 0.208       | 1.022803E-07          | 9.870662E-09                                    | 1.107136E-08          | 1.114306E-09                                    |
| 0.209       | 1.130883E-07          | 1.080799E-08                                    | 1.229736E-08          | 1.226001E-09                                    |
| 0.210       | 1.249110E-07          | 1.182272E-08                                    | 1.364490E-08          | 1.347539E-09                                    |
| 0.211       | 1.378312E-07          | 1.292024E-08                                    | 1.512456E-08          | 1.479661E-09                                    |
| 0.212       | 1.519374E-07          | 1.410622E-08                                    | 1.674771E-08          | 1.623156E-09                                    |
| 0.213       | 1.673241E-07          | 1.538663E-08                                    | 1.852657E-08          | 1.778858E-09                                    |
| 0.214       | 1.840918E-07          | 1.676775E-08                                    | 2.047422E-08          | 1.947653E-09                                    |
| 0.215       | 2.023480E-07          | 1.825621E-08                                    | 2.260470E-08          | 2.130476E-09                                    |
| 0.216       | 2.222070E-07          | 1.985898E-08                                    | 2.493302E-08          | 2.328320E-09                                    |
| 0.217       | 2.437904E-07          | 2.158336E-08                                    | 2.747525E-08          | 2.542232E-09                                    |
| 0.218       | 2.672274E-07          | 2.343703E-08                                    | 3.024857E-08          | 2.773319E-09                                    |
| 0.219       | 2.926554E-07          | 2.542804E-08                                    | 3.327132E-08          | 3.022749E-09                                    |
| 0.220       | 3.202203E-07          | 2.756483E-08                                    | 3.656307E-08          | 3.291755E-09                                    |
| 0.221       | 3.500765E-07          | 2.985624E-08                                    | 4.014471E-08          | 3.581633E-09                                    |
| 0.222       | 3.823880E-07          | 3.231152E-08                                    | 4.403846E-08          | 3.893752E-09                                    |
| 0.223       | 4.173284E-07          | 3.494033E-08                                    | 4.826801E-08          | 4.229548E-09                                    |
| 0.224       | 4.550812E-07          | 3.775279E-08                                    | 5.285854E-08          | 4.590536E-09                                    |
| 0.225       | 4.958406E-07          | 4.075945E-08                                    | 5.783685E-08          | 4.978303E-09                                    |
| 0.226       | 5.398119E-07          | 4.397133E-08                                    | 6.323136E-08          | 5.394517E-09                                    |
| 0.227       | 5.872118E-07          | 4.739990E-08                                    | 6.907229E-08          | 5.840929E-09                                    |
| 0.228       | 6.382690E-07          | 5.105715E-08                                    | 7.539167E-08          | 6.319374E-09                                    |
| 0.229       | 6.932245E-07          | 5.495553E-08                                    | 8.222344E-08          | 6.831775E-09                                    |
| 0.230       | 7.523326E-07          | 5.910802E-08                                    | 8.960359E-08          | 7.380145E-09                                    |
| 0.231       | 8.158607E-07          | 6.352811E-08                                    | 9.757018E-08          | 7.966589E-09                                    |
| 0.232       | 8.840905E-07          | 6.822981E-08                                    | 1.061635E-07          | 8.593312E-09                                    |
| 0.233       | 9.573181E-07          | 7.322769E-08                                    | 1.154261E-07          | 9.262614E-09                                    |
| 0.234       | 1.035855E-06          | 7.853686E-08                                    | 1.254030E-07          | 9.976898E-09                                    |
| 0.235       | 1.120028E-06          | 8.417301E-08                                    | 1.361417E-07          | 1.073868E-08                                    |
| 0.236       | 1.210180E-06          | 9.015240E-08                                    | 1.476922E-07          | 1.155056E-08                                    |
| 0.237       | 1.306672E-06          | 9.649187E-08                                    | 1.601075E-07          | 1.241528E-08                                    |
| 0.238       | 1.409881E-06          | 1.032089E-07                                    | 1.734432E-07          | 1.333568E-08                                    |
| 0.239       | 1.520203E-06          | 1.103214E-07                                    | 1.877579E-07          | 1.431471E-08                                    |
| 0.240       | 1.638051E-06          | 1.178482E-07                                    | 2.031134E-07          | 1.535546E-08                                    |
| 0.241       | 1.763859E-06          | 1.258085E-07                                    | 2.195745E-07          | 1.646112E-08                                    |
| 0.242       | 1.898082E-06          | 1.342223E-07                                    | 2.372095E-07          | 1.763502E-08                                    |
| 0.243       | 2.041192E-06          | 1.431102E-07                                    | 2.560901E-07          | 1.888061E-08                                    |
| 0.244       | 2.193685E-06          | 1.524933E-07                                    | 2.762916E-07          | 2.020149E-08                                    |
| 0.245       | 2.356079E-06          | 1.623936E-07                                    | 2.978930E-07          | 2.160137E-08                                    |
| 0.246       | 2.528912E-06          | 1.728337E-07                                    | 3.209771E-07          | 2.308412E-08                                    |
| 0.247       | 2.712749E-06          | 1.838368E-07                                    | 3.456308E-07          | 2.465373E-08                                    |
| 0.248       | 2.908176E-06          | 1.954269E-07                                    | 3.719452E-07          | 2.631436E-08                                    |
| 0.249       | 3.115805E-06          | 2.076296E-07                                    | 4.000155E-07          | 2.807028E-08                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.250       | 3.336272E-06          | 2.204674E-07                                    | 4.299414E-07          | 2.992594E-08                                    |
| 0.251       | 3.570241E-06          | 2.339691E-07                                    | 4.618273E-07          | 3.188594E-08                                    |
| 0.252       | 3.818402E-06          | 2.481608E-07                                    | 4.957824E-07          | 3.395501E-08                                    |
| 0.253       | 4.081472E-06          | 2.630698E-07                                    | 5.319204E-07          | 3.613807E-08                                    |
| 0.254       | 4.360196E-06          | 2.787244E-07                                    | 5.703606E-07          | 3.844018E-08                                    |
| 0.255       | 4.655350E-06          | 2.951535E-07                                    | 6.112272E-07          | 4.086657E-08                                    |
| 0.256       | 4.967737E-06          | 3.123870E-07                                    | 6.546498E-07          | 4.342264E-08                                    |
| 0.257       | 5.298192E-06          | 3.304553E-07                                    | 7.007638E-07          | 4.611394E-08                                    |
| 0.258       | 5.647581E-06          | 3.493895E-07                                    | 7.497100E-07          | 4.894622E-08                                    |
| 0.259       | 6.016803E-06          | 3.692217E-07                                    | 8.016354E-07          | 5.192539E-08                                    |
| 0.260       | 6.406788E-06          | 3.899845E-07                                    | 8.566929E-07          | 5.505752E-08                                    |
| 0.261       | 6.818499E-06          | 4.117115E-07                                    | 9.150418E-07          | 5.834889E-08                                    |
| 0.262       | 7.252936E-06          | 4.344369E-07                                    | 9.768477E-07          | 6.180593E-08                                    |
| 0.263       | 7.711132E-06          | 4.581957E-07                                    | 1.042283E-06          | 6.543528E-08                                    |
| 0.264       | 8.194155E-06          | 4.830237E-07                                    | 1.111527E-06          | 6.924376E-08                                    |
| 0.265       | 8.703113E-06          | 5.089574E-07                                    | 1.184765E-06          | 7.323835E-08                                    |
| 0.266       | 9.239147E-06          | 5.360341E-07                                    | 1.262191E-06          | 7.742626E-08                                    |
| 0.267       | 9.803439E-06          | 5.642918E-07                                    | 1.344006E-06          | 8.181487E-08                                    |
| 0.268       | 1.039721E-05          | 5.937694E-07                                    | 1.430418E-06          | 8.641175E-08                                    |
| 0.269       | 1.102171E-05          | 6.245065E-07                                    | 1.521643E-06          | 9.122469E-08                                    |
| 0.270       | 1.167826E-05          | 6.565434E-07                                    | 1.617904E-06          | 9.626164E-08                                    |
| 0.271       | 1.236818E-05          | 6.899212E-07                                    | 1.719435E-06          | 1.015308E-07                                    |
| 0.272       | 1.309286E-05          | 7.246818E-07                                    | 1.826476E-06          | 1.070405E-07                                    |
| 0.273       | 1.385373E-05          | 7.608678E-07                                    | 1.939275E-06          | 1.127993E-07                                    |
| 0.274       | 1.465225E-05          | 7.985225E-07                                    | 2.058091E-06          | 1.188161E-07                                    |
| 0.275       | 1.548994E-05          | 8.376901E-07                                    | 2.183191E-06          | 1.250997E-07                                    |
| 0.276       | 1.636836E-05          | 8.784153E-07                                    | 2.314850E-06          | 1.316594E-07                                    |
| 0.277       | 1.728910E-05          | 9.207438E-07                                    | 2.453355E-06          | 1.385047E-07                                    |
| 0.278       | 1.825382E-05          | 9.647218E-07                                    | 2.599000E-06          | 1.456450E-07                                    |
| 0.279       | 1.926422E-05          | 1.010396E-06                                    | 2.752090E-06          | 1.530902E-07                                    |
| 0.280       | 2.032203E-05          | 1.057815E-06                                    | 2.912940E-06          | 1.608503E-07                                    |
| 0.281       | 2.142906E-05          | 1.107027E-06                                    | 3.081876E-06          | 1.689356E-07                                    |
| 0.282       | 2.258714E-05          | 1.158080E-06                                    | 3.259232E-06          | 1.773565E-07                                    |
| 0.283       | 2.379817E-05          | 1.211026E-06                                    | 3.445356E-06          | 1.861238E-07                                    |
| 0.284       | 2.506408E-05          | 1.265913E-06                                    | 3.640604E-06          | 1.952481E-07                                    |
| 0.285       | 2.638687E-05          | 1.322794E-06                                    | 3.845345E-06          | 2.047408E-07                                    |
| 0.286       | 2.776859E-05          | 1.381720E-06                                    | 4.059958E-06          | 2.146130E-07                                    |
| 0.287       | 2.921134E-05          | 1.442744E-06                                    | 4.284834E-06          | 2.248763E-07                                    |
| 0.288       | 3.071726E-05          | 1.505919E-06                                    | 4.520377E-06          | 2.355424E-07                                    |
| 0.289       | 3.228855E-05          | 1.571298E-06                                    | 4.767000E-06          | 2.466232E-07                                    |
| 0.290       | 3.392749E-05          | 1.638936E-06                                    | 5.025131E-06          | 2.581310E-07                                    |
| 0.291       | 3.563638E-05          | 1.708889E-06                                    | 5.295209E-06          | 2.700782E-07                                    |
| 0.292       | 3.741759E-05          | 1.781211E-06                                    | 5.577686E-06          | 2.824772E-07                                    |
| 0.293       | 3.927355E-05          | 1.855959E-06                                    | 5.873027E-06          | 2.953409E-07                                    |
| 0.294       | 4.120674E-05          | 1.933189E-06                                    | 6.181710E-06          | 3.086824E-07                                    |
| 0.295       | 4.321970E-05          | 2.012960E-06                                    | 6.504224E-06          | 3.225148E-07                                    |
| 0.296       | 4.531503E-05          | 2.095328E-06                                    | 6.841076E-06          | 3.368517E-07                                    |
| 0.297       | 4.749538E-05          | 2.180352E-06                                    | 7.192783E-06          | 3.517066E-07                                    |
| 0.298       | 4.976347E-05          | 2.268091E-06                                    | 7.559876E-06          | 3.670934E-07                                    |
| 0.299       | 5.212207E-05          | 2.358605E-06                                    | 7.942903E-06          | 3.830263E-07                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.300       | 5.457403E-05          | 2.451952E-06                                    | 8.342422E-06          | 3.995194E-07                                    |
| 0.301       | 5.712222E-05          | 2.548195E-06                                    | 8.759009E-06          | 4.165873E-07                                    |
| 0.302       | 5.976961E-05          | 2.647392E-06                                    | 9.193254E-06          | 4.342447E-07                                    |
| 0.303       | 6.251922E-05          | 2.749606E-06                                    | 9.645760E-06          | 4.525064E-07                                    |
| 0.304       | 6.537412E-05          | 2.854898E-06                                    | 1.011715E-05          | 4.713876E-07                                    |
| 0.305       | 6.833745E-05          | 2.963331E-06                                    | 1.060805E-05          | 4.909035E-07                                    |
| 0.306       | 7.141241E-05          | 3.074966E-06                                    | 1.111912E-05          | 5.110697E-07                                    |
| 0.307       | 7.460228E-05          | 3.189866E-06                                    | 1.165102E-05          | 5.319019E-07                                    |
| 0.308       | 7.791038E-05          | 3.308094E-06                                    | 1.220444E-05          | 5.534159E-07                                    |
| 0.309       | 8.134009E-05          | 3.429715E-06                                    | 1.278007E-05          | 5.756278E-07                                    |
| 0.310       | 8.489488E-05          | 3.554791E-06                                    | 1.337862E-05          | 5.985539E-07                                    |
| 0.311       | 8.857827E-05          | 3.683388E-06                                    | 1.400083E-05          | 6.222107E-07                                    |
| 0.312       | 9.239384E-05          | 3.815568E-06                                    | 1.464745E-05          | 6.466148E-07                                    |
| 0.313       | 9.634523E-05          | 3.951397E-06                                    | 1.531923E-05          | 6.717830E-07                                    |
| 0.314       | 1.004362E-04          | 4.090939E-06                                    | 1.601696E-05          | 6.977324E-07                                    |
| 0.315       | 1.046704E-04          | 4.234260E-06                                    | 1.674144E-05          | 7.244800E-07                                    |
| 0.316       | 1.090519E-04          | 4.381424E-06                                    | 1.749349E-05          | 7.520434E-07                                    |
| 0.317       | 1.135844E-04          | 4.532498E-06                                    | 1.827392E-05          | 7.804401E-07                                    |
| 0.318       | 1.182719E-04          | 4.687547E-06                                    | 1.908361E-05          | 8.096876E-07                                    |
| 0.319       | 1.231185E-04          | 4.846636E-06                                    | 1.992342E-05          | 8.398040E-07                                    |
| 0.320       | 1.281284E-04          | 5.009831E-06                                    | 2.079422E-05          | 8.708073E-07                                    |
| 0.321       | 1.333056E-04          | 5.177199E-06                                    | 2.169694E-05          | 9.027156E-07                                    |
| 0.322       | 1.386544E-04          | 5.348805E-06                                    | 2.263249E-05          | 9.355472E-07                                    |
| 0.323       | 1.441791E-04          | 5.524715E-06                                    | 2.360181E-05          | 9.693209E-07                                    |
| 0.324       | 1.498841E-04          | 5.704996E-06                                    | 2.460586E-05          | 1.004055E-06                                    |
| 0.325       | 1.557738E-04          | 5.889713E-06                                    | 2.564563E-05          | 1.039769E-06                                    |
| 0.326       | 1.618527E-04          | 6.078933E-06                                    | 2.672211E-05          | 1.076481E-06                                    |
| 0.327       | 1.681255E-04          | 6.272722E-06                                    | 2.783632E-05          | 1.114210E-06                                    |
| 0.328       | 1.745966E-04          | 6.471146E-06                                    | 2.898930E-05          | 1.152976E-06                                    |
| 0.329       | 1.812709E-04          | 6.674270E-06                                    | 3.018210E-05          | 1.192798E-06                                    |
| 0.330       | 1.881530E-04          | 6.882162E-06                                    | 3.141579E-05          | 1.233695E-06                                    |
| 0.331       | 1.952479E-04          | 7.094886E-06                                    | 3.269148E-05          | 1.275688E-06                                    |
| 0.332       | 2.025604E-04          | 7.312508E-06                                    | 3.401028E-05          | 1.318796E-06                                    |
| 0.333       | 2.100955E-04          | 7.535094E-06                                    | 3.537331E-05          | 1.363038E-06                                    |
| 0.334       | 2.178582E-04          | 7.762709E-06                                    | 3.678175E-05          | 1.408435E-06                                    |
| 0.335       | 2.258536E-04          | 7.995419E-06                                    | 3.823675E-05          | 1.455006E-06                                    |
| 0.336       | 2.340869E-04          | 8.233289E-06                                    | 3.973953E-05          | 1.502773E-06                                    |
| 0.337       | 2.425633E-04          | 8.476382E-06                                    | 4.129128E-05          | 1.551755E-06                                    |
| 0.338       | 2.512881E-04          | 8.724765E-06                                    | 4.289325E-05          | 1.601972E-06                                    |
| 0.339       | 2.602666E-04          | 8.978500E-06                                    | 4.454670E-05          | 1.653445E-06                                    |
| 0.340       | 2.695042E-04          | 9.237653E-06                                    | 4.625289E-05          | 1.706195E-06                                    |
| 0.341       | 2.790065E-04          | 9.502286E-06                                    | 4.801314E-05          | 1.760243E-06                                    |
| 0.342       | 2.887790E-04          | 9.772464E-06                                    | 4.982875E-05          | 1.815608E-06                                    |
| 0.343       | 2.988272E-04          | 1.004825E-05                                    | 5.170106E-05          | 1.872312E-06                                    |
| 0.344       | 3.091569E-04          | 1.032970E-05                                    | 5.363143E-05          | 1.930376E-06                                    |
| 0.345       | 3.197738E-04          | 1.061689E-05                                    | 5.562125E-05          | 1.989820E-06                                    |
| 0.346       | 3.306837E-04          | 1.090987E-05                                    | 5.767192E-05          | 2.050665E-06                                    |
| 0.347       | 3.418924E-04          | 1.120871E-05                                    | 5.978485E-05          | 2.112934E-06                                    |
| 0.348       | 3.534059E-04          | 1.151346E-05                                    | 6.196150E-05          | 2.176646E-06                                    |
| 0.349       | 3.652301E-04          | 1.182419E-05                                    | 6.420332E-05          | 2.241823E-06                                    |

# R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.350       | 3.773710E-04          | 1.214096E-05                                    | 6.651181E-05          | 2.308486E-06                                    |
| 0.351       | 3.898348E-04          | 1.246382E-05                                    | 6.388846E-05          | 2.376656E-06                                    |
| 0.352       | 4.026277E-04          | 1.279284E-05                                    | 7.133482E-05          | 2.446354E-06                                    |
| 0.353       | 4.157557E-04          | 1.312808E-05                                    | 7.385242E-05          | 2.517603E-06                                    |
| 0.354       | 4.292253E-04          | 1.346959E-05                                    | 7.644284E-05          | 2.590423E-06                                    |
| 0.355       | 4.430428E-04          | 1.381742E-05                                    | 7.910767E-05          | 2.664835E-06                                    |
| 0.356       | 4.572144E-04          | 1.417165E-05                                    | 8.184854E-05          | 2.740861E-06                                    |
| 0.357       | 4.717467E-04          | 1.453232E-05                                    | 8.466706E-05          | 2.818522E-06                                    |
| 0.358       | 4.866462E-04          | 1.489949E-05                                    | 8.756490E-05          | 2.897839E-06                                    |
| 0.359       | 5.019194E-04          | 1.527321E-05                                    | 9.054373E-05          | 2.978835E-06                                    |
| 0.360       | 5.175730E-04          | 1.565355E-05                                    | 9.360526E-05          | 3.061530E-06                                    |
| 0.361       | 5.336135E-04          | 1.604054E-05                                    | 9.675121E-05          | 3.145945E-06                                    |
| 0.362       | 5.500478E-04          | 1.643426E-05                                    | 9.998331E-05          | 3.232103E-06                                    |
| 0.363       | 5.668825E-04          | 1.683474E-05                                    | 1.033033E-04          | 3.320023E-06                                    |
| 0.364       | 5.841246E-04          | 1.724204E-05                                    | 1.067131E-04          | 3.409729E-06                                    |
| 0.365       | 6.017808E-04          | 1.765622E-05                                    | 1.102143E-04          | 3.501240E-06                                    |
| 0.366       | 6.198581E-04          | 1.807731E-05                                    | 1.138089E-04          | 3.594578E-06                                    |
| 0.367       | 6.383635E-04          | 1.850538E-05                                    | 1.174986E-04          | 3.689765E-06                                    |
| 0.368       | 6.573040E-04          | 1.894047E-05                                    | 1.212855E-04          | 3.786821E-06                                    |
| 0.369       | 6.766866E-04          | 1.938263E-05                                    | 1.251712E-04          | 3.885768E-06                                    |
| 0.370       | 6.965185E-04          | 1.983191E-05                                    | 1.291579E-04          | 3.986626E-06                                    |
| 0.371       | 7.168068E-04          | 2.028835E-05                                    | 1.332473E-04          | 4.089417E-06                                    |
| 0.372       | 7.375588E-04          | 2.075199E-05                                    | 1.374414E-04          | 4.194162E-06                                    |
| 0.373       | 7.587817E-04          | 2.122289E-05                                    | 1.417423E-04          | 4.300881E-06                                    |
| 0.374       | 7.804828E-04          | 2.170109E-05                                    | 1.461519E-04          | 4.409595E-06                                    |
| 0.375       | 8.026695E-04          | 2.218664E-05                                    | 1.506722E-04          | 4.520326E-06                                    |
| 0.376       | 8.253490E-04          | 2.267956E-05                                    | 1.553053E-04          | 4.633093E-06                                    |
| 0.377       | 8.485289E-04          | 2.317991E-05                                    | 1.600533E-04          | 4.747918E-06                                    |
| 0.378       | 8.722167E-04          | 2.368773E-05                                    | 1.649181E-04          | 4.864820E-06                                    |
| 0.379       | 8.964197E-04          | 2.420305E-05                                    | 1.699019E-04          | 4.983821E-06                                    |
| 0.380       | 9.211456E-04          | 2.472592E-05                                    | 1.750068E-04          | 5.104940E-06                                    |
| 0.381       | 9.464020E-04          | 2.525638E-05                                    | 1.802350E-04          | 5.228198E-06                                    |
| 0.382       | 9.721965E-04          | 2.579445E-05                                    | 1.855886E-04          | 5.353615E-06                                    |
| 0.383       | 9.985366E-04          | 2.634018E-05                                    | 1.910699E-04          | 5.481211E-06                                    |
| 0.384       | 1.025430E-03          | 2.689361E-05                                    | 1.966809E-04          | 5.611006E-06                                    |
| 0.385       | 1.052885E-03          | 2.745476E-05                                    | 2.024239E-04          | 5.743019E-06                                    |
| 0.386       | 1.080909E-03          | 2.802367E-05                                    | 2.083012E-04          | 5.877270E-06                                    |
| 0.387       | 1.109509E-03          | 2.860038E-05                                    | 2.143149E-04          | 6.013779E-06                                    |
| 0.388       | 1.138694E-03          | 2.918491E-05                                    | 2.204675E-04          | 6.152566E-06                                    |
| 0.389       | 1.168471E-03          | 2.977730E-05                                    | 2.267611E-04          | 6.293648E-06                                    |
| 0.390       | 1.198849E-03          | 3.037757E-05                                    | 2.331982E-04          | 6.437047E-06                                    |
| 0.391       | 1.229835E-03          | 3.098576E-05                                    | 2.397810E-04          | 6.582780E-06                                    |
| 0.392       | 1.261436E-03          | 3.160189E-05                                    | 2.465118E-04          | 6.730866E-06                                    |
| 0.393       | 1.293662E-03          | 3.222599E-05                                    | 2.533932E-04          | 6.881324E-06                                    |
| 0.394       | 1.326521E-03          | 3.285808E-05                                    | 2.604273E-04          | 7.034174E-06                                    |
| 0.395       | 1.360019E-03          | 3.349820E-05                                    | 2.676168E-04          | 7.189432E-06                                    |
| 0.396       | 1.394165E-03          | 3.414636E-05                                    | 2.749639E-04          | 7.347117E-06                                    |
| 0.397       | 1.428968E-03          | 3.480259E-05                                    | 2.824711E-04          | 7.507248E-06                                    |
| 0.398       | 1.464435E-03          | 3.546690E-05                                    | 2.901410E-04          | 7.669843E-06                                    |
| 0.399       | 1.500574E-03          | 3.613933E-05                                    | 2.979759E-04          | 7.834918E-06                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.400       | 1.537394E-03          | 3.681989E-05                                    | 3.059784E-04          | 8.002492E-06                                    |
| 0.401       | 1.574902E-03          | 3.750859E-05                                    | 3.141510E-04          | 8.172583E-06                                    |
| 0.402       | 1.613108E-03          | 3.820547E-05                                    | 3.224962E-04          | 8.345206E-06                                    |
| 0.403       | 1.652018E-03          | 3.891053E-05                                    | 3.310166E-04          | 8.520380E-06                                    |
| 0.404       | 1.691642E-03          | 3.962378E-05                                    | 3.397147E-04          | 8.698121E-06                                    |
| 0.405       | 1.731987E-03          | 4.034526E-05                                    | 3.485931E-04          | 8.878446E-06                                    |
| 0.406       | 1.773062E-03          | 4.107496E-05                                    | 3.576545E-04          | 9.061371E-06                                    |
| 0.407       | 1.814875E-03          | 4.181290E-05                                    | 3.669014E-04          | 9.246913E-06                                    |
| 0.408       | 1.857434E-03          | 4.255910E-05                                    | 3.763365E-04          | 9.435087E-06                                    |
| 0.409       | 1.900748E-03          | 4.331356E-05                                    | 3.859624E-04          | 9.625911E-06                                    |
| 0.410       | 1.944824E-03          | 4.407630E-05                                    | 3.957818E-04          | 9.819398E-06                                    |
| 0.411       | 1.989672E-03          | 4.484731E-05                                    | 4.057974E-04          | 1.001557E-05                                    |
| 0.412       | 2.035298E-03          | 4.562663E-05                                    | 4.160118E-04          | 1.021443E-05                                    |
| 0.413       | 2.081712E-03          | 4.641423E-05                                    | 4.264278E-04          | 1.041600E-05                                    |
| 0.414       | 2.128923E-03          | 4.721015E-05                                    | 4.370481E-04          | 1.062030E-05                                    |
| 0.415       | 2.176937E-03          | 4.801437E-05                                    | 4.478754E-04          | 1.082733E-05                                    |
| 0.416       | 2.225764E-03          | 4.882690E-05                                    | 4.589126E-04          | 1.103713E-05                                    |
| 0.417       | 2.275412E-03          | 4.964775E-05                                    | 4.701622E-04          | 1.124968E-05                                    |
| 0.418       | 2.325889E-03          | 5.047691E-05                                    | 4.816273E-04          | 1.146503E-05                                    |
| 0.419       | 2.377203E-03          | 5.131440E-05                                    | 4.933104E-04          | 1.168316E-05                                    |
| 0.420       | 2.429363E-03          | 5.216020E-05                                    | 5.052145E-04          | 1.190411E-05                                    |
| 0.421       | 2.482377E-03          | 5.301431E-05                                    | 5.173424E-04          | 1.212788E-05                                    |
| 0.422       | 2.536254E-03          | 5.387674E-05                                    | 5.296969E-04          | 1.235448E-05                                    |
| 0.423       | 2.591002E-03          | 5.474749E-05                                    | 5.422808E-04          | 1.258394E-05                                    |
| 0.424       | 2.646628E-03          | 5.562653E-05                                    | 5.550971E-04          | 1.281625E-05                                    |
| 0.425       | 2.703142E-03          | 5.651388E-05                                    | 5.681485E-04          | 1.305144E-05                                    |
| 0.426       | 2.760552E-03          | 5.740953E-05                                    | 5.814381E-04          | 1.328952E-05                                    |
| 0.427       | 2.818865E-03          | 5.831346E-05                                    | 5.949685E-04          | 1.353049E-05                                    |
| 0.428       | 2.878091E-03          | 5.922567E-05                                    | 6.087429E-04          | 1.377437E-05                                    |
| 0.429       | 2.938237E-03          | 6.014616E-05                                    | 6.227641E-04          | 1.402117E-05                                    |
| 0.430       | 2.999312E-03          | 6.107490E-05                                    | 6.370350E-04          | 1.427091E-05                                    |
| 0.431       | 3.061324E-03          | 6.201190E-05                                    | 6.515586E-04          | 1.452358E-05                                    |
| 0.432       | 3.124281E-03          | 6.295713E-05                                    | 6.663378E-04          | 1.477921E-05                                    |
| 0.433       | 3.188191E-03          | 6.391059E-05                                    | 6.813756E-04          | 1.503781E-05                                    |
| 0.434       | 3.253064E-03          | 6.487226E-05                                    | 6.966750E-04          | 1.529938E-05                                    |
| 0.435       | 3.318906E-03          | 6.584212E-05                                    | 7.122389E-04          | 1.556393E-05                                    |
| 0.436       | 3.385726E-03          | 6.682017E-05                                    | 7.280704E-04          | 1.583147E-05                                    |
| 0.437       | 3.453532E-03          | 6.780638E-05                                    | 7.441724E-04          | 1.610202E-05                                    |
| 0.438       | 3.522333E-03          | 6.880074E-05                                    | 7.605480E-04          | 1.637558E-05                                    |
| 0.439       | 3.592136E-03          | 6.980322E-05                                    | 7.772001E-04          | 1.665216E-05                                    |
| 0.440       | 3.662950E-03          | 7.081381E-05                                    | 7.941319E-04          | 1.693177E-05                                    |
| 0.441       | 3.734783E-03          | 7.183250E-05                                    | 8.113463E-04          | 1.721442E-05                                    |
| 0.442       | 3.807642E-03          | 7.285924E-05                                    | 8.288464E-04          | 1.750011E-05                                    |
| 0.443       | 3.881536E-03          | 7.389404E-05                                    | 8.466353E-04          | 1.778886E-05                                    |
| 0.444       | 3.956473E-03          | 7.493685E-05                                    | 8.647160E-04          | 1.808067E-05                                    |
| 0.445       | 4.032460E-03          | 7.598767E-05                                    | 8.830915E-04          | 1.837555E-05                                    |
| 0.446       | 4.109507E-03          | 7.704646E-05                                    | 9.017650E-04          | 1.867350E-05                                    |
| 0.447       | 4.187620E-03          | 7.811319E-05                                    | 9.207396E-04          | 1.897454E-05                                    |
| 0.448       | 4.266808E-03          | 7.918785E-05                                    | 9.400182E-04          | 1.927867E-05                                    |
| 0.449       | 4.347078E-03          | 8.027040E-05                                    | 9.596041E-04          | 1.958589E-05                                    |

R. J. H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_n^1(\lambda_n)$ | $\eta_n^1(\lambda_n) - \eta_n^1(\lambda_{n-1})$ | $\eta_n^2(\lambda_n)$ | $\eta_n^2(\lambda_n) - \eta_n^2(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.450       | 4.424439E-03          | 8.136082E-05                                    | 9.795003E-04          | 1.989621E-05                                    |
| 0.451       | 4.510898E-03          | 8.245908E-05                                    | 9.997100E-04          | 2.020965E-05                                    |
| 0.452       | 4.594463E-03          | 8.356515E-05                                    | 1.020236E-03          | 2.052619E-05                                    |
| 0.453       | 4.679142E-03          | 8.467899E-05                                    | 1.041082E-03          | 2.084585E-05                                    |
| 0.454       | 4.764943E-03          | 8.580058E-05                                    | 1.062251E-03          | 2.116866E-05                                    |
| 0.455       | 4.851873E-03          | 8.692988E-05                                    | 1.083745E-03          | 2.149455E-05                                    |
| 0.456       | 4.939940E-03          | 8.806687E-05                                    | 1.105569E-03          | 2.182359E-05                                    |
| 0.457       | 5.029151E-03          | 8.921150E-05                                    | 1.127725E-03          | 2.215578E-05                                    |
| 0.458       | 5.119515E-03          | 9.036374E-05                                    | 1.150216E-03          | 2.249110E-05                                    |
| 0.459       | 5.211038E-03          | 9.152357E-05                                    | 1.173045E-03          | 2.282956E-05                                    |
| 0.460       | 5.303729E-03          | 9.269093E-05                                    | 1.196216E-03          | 2.317118E-05                                    |
| 0.461       | 5.397595E-03          | 9.386580E-05                                    | 1.219732E-03          | 2.351594E-05                                    |
| 0.462       | 5.492643E-03          | 9.504614E-05                                    | 1.243596E-03          | 2.386386E-05                                    |
| 0.463       | 5.588881E-03          | 9.623791E-05                                    | 1.267811E-03          | 2.421493E-05                                    |
| 0.464       | 5.686316E-03          | 9.743507E-05                                    | 1.292380E-03          | 2.456916E-05                                    |
| 0.465       | 5.784956E-03          | 9.863958E-05                                    | 1.317307E-03          | 2.492655E-05                                    |
| 0.466       | 5.884807E-03          | 9.985140E-05                                    | 1.342594E-03          | 2.528711E-05                                    |
| 0.467       | 5.985878E-03          | 1.010705E-04                                    | 1.368245E-03          | 2.565082E-05                                    |
| 0.468       | 6.088175E-03          | 1.022968E-04                                    | 1.394263E-03          | 2.601771E-05                                    |
| 0.469       | 6.191705E-03          | 1.035303E-04                                    | 1.420650E-03          | 2.638775E-05                                    |
| 0.470       | 6.296476E-03          | 1.047710E-04                                    | 1.447411E-03          | 2.676097E-05                                    |
| 0.471       | 6.402495E-03          | 1.060187E-04                                    | 1.474549E-03          | 2.713735E-05                                    |
| 0.472       | 6.509768E-03          | 1.072735E-04                                    | 1.502065E-03          | 2.751690E-05                                    |
| 0.473       | 6.618304E-03          | 1.085354E-04                                    | 1.529965E-03          | 2.789962E-05                                    |
| 0.474       | 6.728108E-03          | 1.098042E-04                                    | 1.558251E-03          | 2.828551E-05                                    |
| 0.475       | 6.839188E-03          | 1.110799E-04                                    | 1.586925E-03          | 2.867456E-05                                    |
| 0.476       | 6.951550E-03          | 1.123624E-04                                    | 1.615992E-03          | 2.906678E-05                                    |
| 0.477       | 7.065202E-03          | 1.136518E-04                                    | 1.645454E-03          | 2.946216E-05                                    |
| 0.478       | 7.180150E-03          | 1.149480E-04                                    | 1.675315E-03          | 2.986071E-05                                    |
| 0.479       | 7.296401E-03          | 1.162509E-04                                    | 1.705577E-03          | 3.026242E-05                                    |
| 0.480       | 7.413961E-03          | 1.175605E-04                                    | 1.736245E-03          | 3.066729E-05                                    |
| 0.481       | 7.532838E-03          | 1.188768E-04                                    | 1.767320E-03          | 3.107532E-05                                    |
| 0.482       | 7.653038E-03          | 1.201996E-04                                    | 1.798806E-03          | 3.148650E-05                                    |
| 0.483       | 7.774567E-03          | 1.215289E-04                                    | 1.830707E-03          | 3.190084E-05                                    |
| 0.484       | 7.897431E-03          | 1.228647E-04                                    | 1.863026E-03          | 3.231833E-05                                    |
| 0.485       | 8.021638E-03          | 1.242070E-04                                    | 1.895764E-03          | 3.273897E-05                                    |
| 0.486       | 8.147194E-03          | 1.255556E-04                                    | 1.928927E-03          | 3.316275E-05                                    |
| 0.487       | 8.274105E-03          | 1.269106E-04                                    | 1.962517E-03          | 3.358967E-05                                    |
| 0.488       | 8.402376E-03          | 1.282718E-04                                    | 1.996537E-03          | 3.401973E-05                                    |
| 0.489       | 8.532016E-03          | 1.296392E-04                                    | 2.030990E-03          | 3.445293E-05                                    |
| 0.490       | 8.663028E-03          | 1.310128E-04                                    | 2.065879E-03          | 3.488925E-05                                    |
| 0.491       | 8.795421E-03          | 1.323926E-04                                    | 2.101208E-03          | 3.532870E-05                                    |
| 0.492       | 8.929199E-03          | 1.337783E-04                                    | 2.136979E-03          | 3.577127E-05                                    |
| 0.493       | 9.064369E-03          | 1.351701E-04                                    | 2.173196E-03          | 3.621695E-05                                    |
| 0.494       | 9.200937E-03          | 1.365678E-04                                    | 2.209861E-03          | 3.666575E-05                                    |
| 0.495       | 9.338909E-03          | 1.379714E-04                                    | 2.246979E-03          | 3.711765E-05                                    |
| 0.496       | 9.478289E-03          | 1.393808E-04                                    | 2.284552E-03          | 3.757264E-05                                    |
| 0.497       | 9.619086E-03          | 1.407960E-04                                    | 2.322583E-03          | 3.803074E-05                                    |
| 0.498       | 9.761302E-03          | 1.422170E-04                                    | 2.361074E-03          | 3.849191E-05                                    |
| 0.499       | 9.904946E-03          | 1.436435E-04                                    | 2.400031E-03          | 3.895617E-05                                    |

R. F. H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R(\lambda_n)$ | $\eta_R(\lambda_n) - \eta_R(\lambda_{n-1})$ | $\eta_Q(\lambda_n)$ | $\eta_Q(\lambda_n) - \eta_Q(\lambda_{n-1})$ |
|-------------|---------------------|---------------------------------------------|---------------------|---------------------------------------------|
| 0.500       | 1.005002E-02        | 1.450757E-04                                | 2.439454E-03        | 3.942351E-05                                |
| 0.501       | 1.019654E-02        | 1.465134E-04                                | 2.479348E-03        | 3.989391E-05                                |
| 0.502       | 1.034449E-02        | 1.479566E-04                                | 2.519715E-03        | 4.036737E-05                                |
| 0.503       | 1.049390E-02        | 1.494053E-04                                | 2.560559E-03        | 4.084389E-05                                |
| 0.504       | 1.064476E-02        | 1.508593E-04                                | 2.601883E-03        | 4.132345E-05                                |
| 0.505       | 1.079707E-02        | 1.523186E-04                                | 2.643689E-03        | 4.180605E-05                                |
| 0.506       | 1.095086E-02        | 1.537832E-04                                | 2.685980E-03        | 4.229168E-05                                |
| 0.507       | 1.110611E-02        | 1.552529E-04                                | 2.728761E-03        | 4.278033E-05                                |
| 0.508       | 1.126284E-02        | 1.567278E-04                                | 2.772033E-03        | 4.327200E-05                                |
| 0.509       | 1.142105E-02        | 1.582077E-04                                | 2.815799E-03        | 4.376668E-05                                |
| 0.510       | 1.158074E-02        | 1.596926E-04                                | 2.860064E-03        | 4.426435E-05                                |
| 0.511       | 1.174192E-02        | 1.611825E-04                                | 2.904829E-03        | 4.476501E-05                                |
| 0.512       | 1.190460E-02        | 1.626773E-04                                | 2.950097E-03        | 4.526865E-05                                |
| 0.513       | 1.206878E-02        | 1.641769E-04                                | 2.995873E-03        | 4.577526E-05                                |
| 0.514       | 1.223446E-02        | 1.656812E-04                                | 3.042158E-03        | 4.628483E-05                                |
| 0.515       | 1.240165E-02        | 1.671902E-04                                | 3.088955E-03        | 4.679735E-05                                |
| 0.516       | 1.257035E-02        | 1.687039E-04                                | 3.136268E-03        | 4.731282E-05                                |
| 0.517       | 1.274057E-02        | 1.702222E-04                                | 3.184099E-03        | 4.783121E-05                                |
| 0.518       | 1.291232E-02        | 1.717449E-04                                | 3.232451E-03        | 4.835253E-05                                |
| 0.519       | 1.308559E-02        | 1.732721E-04                                | 3.281328E-03        | 4.887675E-05                                |
| 0.520       | 1.326039E-02        | 1.748037E-04                                | 3.330732E-03        | 4.940388E-05                                |
| 0.521       | 1.343673E-02        | 1.763396E-04                                | 3.380666E-03        | 4.993389E-05                                |
| 0.522       | 1.361461E-02        | 1.778797E-04                                | 3.431133E-03        | 5.046679E-05                                |
| 0.523       | 1.379404E-02        | 1.794240E-04                                | 3.482135E-03        | 5.100255E-05                                |
| 0.524       | 1.397501E-02        | 1.809725E-04                                | 3.533676E-03        | 5.154116E-05                                |
| 0.525       | 1.415753E-02        | 1.825250E-04                                | 3.585759E-03        | 5.208262E-05                                |
| 0.526       | 1.434162E-02        | 1.840816E-04                                | 3.638386E-03        | 5.262692E-05                                |
| 0.527       | 1.452726E-02        | 1.856420E-04                                | 3.691560E-03        | 5.317403E-05                                |
| 0.528       | 1.471446E-02        | 1.872064E-04                                | 3.745284E-03        | 5.372395E-05                                |
| 0.529       | 1.490324E-02        | 1.887745E-04                                | 3.799561E-03        | 5.427667E-05                                |
| 0.530       | 1.509359E-02        | 1.903464E-04                                | 3.854393E-03        | 5.483218E-05                                |
| 0.531       | 1.528551E-02        | 1.919219E-04                                | 3.909783E-03        | 5.539045E-05                                |
| 0.532       | 1.547901E-02        | 1.935011E-04                                | 3.965735E-03        | 5.595149E-05                                |
| 0.533       | 1.567409E-02        | 1.950838E-04                                | 4.022250E-03        | 5.651527E-05                                |
| 0.534       | 1.587076E-02        | 1.966700E-04                                | 4.079332E-03        | 5.708178E-05                                |
| 0.535       | 1.606902E-02        | 1.982597E-04                                | 4.136983E-03        | 5.765101E-05                                |
| 0.536       | 1.626887E-02        | 1.998526E-04                                | 4.195206E-03        | 5.822295E-05                                |
| 0.537       | 1.647032E-02        | 2.014489E-04                                | 4.254003E-03        | 5.879759E-05                                |
| 0.538       | 1.667337E-02        | 2.030484E-04                                | 4.313378E-03        | 5.937490E-05                                |
| 0.539       | 1.687802E-02        | 2.046510E-04                                | 4.373333E-03        | 5.995488E-05                                |
| 0.540       | 1.708428E-02        | 2.062568E-04                                | 4.433871E-03        | 6.053751E-05                                |
| 0.541       | 1.729215E-02        | 2.078656E-04                                | 4.494993E-03        | 6.112278E-05                                |
| 0.542       | 1.750162E-02        | 2.094773E-04                                | 4.556704E-03        | 6.171067E-05                                |
| 0.543       | 1.771271E-02        | 2.110919E-04                                | 4.619005E-03        | 6.230117E-05                                |
| 0.544       | 1.792542E-02        | 2.127094E-04                                | 4.681900E-03        | 6.289427E-05                                |
| 0.545       | 1.813975E-02        | 2.143296E-04                                | 4.745390E-03        | 6.348995E-05                                |
| 0.546       | 1.835571E-02        | 2.159526E-04                                | 4.809478E-03        | 6.408819E-05                                |
| 0.547       | 1.857328E-02        | 2.175782E-04                                | 4.874167E-03        | 6.468898E-05                                |
| 0.548       | 1.879249E-02        | 2.192063E-04                                | 4.939459E-03        | 6.529231E-05                                |

R.F.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_n/\lambda_n$ | $\eta_n^1(\lambda_n) - \eta_n^1(\lambda_{n-1})$ | $\eta_0^1(\lambda_n)$ | $\eta_0^1(\lambda_n) - \eta_0^1(\lambda_{n-1})$ |
|-------------|--------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.549       | 1.901333E-02       | 2.208370E-04                                    | 5.065357E-03          | 6.509816E-05                                    |
| 0.550       | 1.923580E-02       | 2.224701E-04                                    | 5.071864E-03          | 6.650652E-05                                    |
| 0.551       | 1.945990E-02       | 2.241056E-04                                    | 5.138981E-03          | 6.711736E-05                                    |
| 0.552       | 1.968565E-02       | 2.257434E-04                                    | 5.206712E-03          | 6.773068E-05                                    |
| 0.553       | 1.991303E-02       | 2.273835E-04                                    | 5.275058E-03          | 6.834646E-05                                    |
| 0.554       | 2.014206E-02       | 2.290258E-04                                    | 5.344023E-03          | 6.896468E-05                                    |
| 0.555       | 2.037273E-02       | 2.306701E-04                                    | 5.413608E-03          | 6.958533E-05                                    |
| 0.556       | 2.060504E-02       | 2.323166E-04                                    | 5.483817E-03          | 7.020839E-05                                    |
| 0.557       | 2.083901E-02       | 2.339650E-04                                    | 5.554650E-03          | 7.083385E-05                                    |
| 0.558       | 2.107462E-02       | 2.356154E-04                                    | 5.626112E-03          | 7.146168E-05                                    |
| 0.559       | 2.131189E-02       | 2.372676E-04                                    | 5.698204E-03          | 7.209188E-05                                    |
| 0.560       | 2.155081E-02       | 2.389216E-04                                    | 5.770929E-03          | 7.272443E-05                                    |
| 0.561       | 2.179139E-02       | 2.405774E-04                                    | 5.844288E-03          | 7.335930E-05                                    |
| 0.562       | 2.203362E-02       | 2.422348E-04                                    | 5.918284E-03          | 7.399649E-05                                    |
| 0.563       | 2.227752E-02       | 2.438939E-04                                    | 5.992920E-03          | 7.463598E-05                                    |
| 0.564       | 2.252307E-02       | 2.455545E-04                                    | 6.068198E-03          | 7.527774E-05                                    |
| 0.565       | 2.277029E-02       | 2.472166E-04                                    | 6.144120E-03          | 7.592177E-05                                    |
| 0.566       | 2.301917E-02       | 2.488801E-04                                    | 6.220688E-03          | 7.656805E-05                                    |
| 0.567       | 2.326972E-02       | 2.505450E-04                                    | 6.297904E-03          | 7.721655E-05                                    |
| 0.568       | 2.352193E-02       | 2.522112E-04                                    | 6.375772E-03          | 7.786727E-05                                    |
| 0.569       | 2.377580E-02       | 2.538786E-04                                    | 6.454292E-03          | 7.852018E-05                                    |
| 0.570       | 2.403135E-02       | 2.555472E-04                                    | 6.533467E-03          | 7.917527E-05                                    |
| 0.571       | 2.428857E-02       | 2.572169E-04                                    | 6.613300E-03          | 7.983252E-05                                    |
| 0.572       | 2.454746E-02       | 2.588876E-04                                    | 6.693792E-03          | 8.049191E-05                                    |
| 0.573       | 2.480802E-02       | 2.605593E-04                                    | 6.774945E-03          | 8.115343E-05                                    |
| 0.574       | 2.507025E-02       | 2.622320E-04                                    | 6.856762E-03          | 8.181705E-05                                    |
| 0.575       | 2.533415E-02       | 2.639055E-04                                    | 6.939245E-03          | 8.248277E-05                                    |
| 0.576       | 2.559973E-02       | 2.655798E-04                                    | 7.022395E-03          | 8.315055E-05                                    |
| 0.577       | 2.586699E-02       | 2.672549E-04                                    | 7.106216E-03          | 8.382040E-05                                    |
| 0.578       | 2.613592E-02       | 2.689306E-04                                    | 7.190706E-03          | 8.449227E-05                                    |
| 0.579       | 2.640653E-02       | 2.706070E-04                                    | 7.275874E-03          | 8.516617E-05                                    |
| 0.580       | 2.667881E-02       | 2.722839E-04                                    | 7.361716E-03          | 8.584207E-05                                    |
| 0.581       | 2.695277E-02       | 2.739614E-04                                    | 7.448236E-03          | 8.651995E-05                                    |
| 0.582       | 2.722841E-02       | 2.756392E-04                                    | 7.535436E-03          | 8.719979E-05                                    |
| 0.583       | 2.750573E-02       | 2.773175E-04                                    | 7.623318E-03          | 8.788158E-05                                    |
| 0.584       | 2.778472E-02       | 2.789960E-04                                    | 7.711883E-03          | 8.856530E-05                                    |
| 0.585       | 2.806540E-02       | 2.806749E-04                                    | 7.801134E-03          | 8.925093E-05                                    |
| 0.586       | 2.834775E-02       | 2.823539E-04                                    | 7.891072E-03          | 8.993845E-05                                    |
| 0.587       | 2.863179E-02       | 2.840331E-04                                    | 7.981700E-03          | 9.062784E-05                                    |
| 0.588       | 2.891750E-02       | 2.857123E-04                                    | 8.073019E-03          | 9.131909E-05                                    |
| 0.589       | 2.920489E-02       | 2.873916E-04                                    | 8.165031E-03          | 9.201217E-05                                    |
| 0.590       | 2.949396E-02       | 2.890709E-04                                    | 8.257738E-03          | 9.270707E-05                                    |
| 0.591       | 2.978471E-02       | 2.907501E-04                                    | 8.351142E-03          | 9.340377E-05                                    |
| 0.592       | 3.007714E-02       | 2.924291E-04                                    | 8.445244E-03          | 9.410225E-05                                    |
| 0.593       | 3.037125E-02       | 2.941079E-04                                    | 8.540047E-03          | 9.480248E-05                                    |
| 0.594       | 3.066703E-02       | 2.957865E-04                                    | 8.635551E-03          | 9.550447E-05                                    |
| 0.595       | 3.096450E-02       | 2.974647E-04                                    | 8.731759E-03          | 9.620817E-05                                    |
| 0.596       | 3.126364E-02       | 2.991426E-04                                    | 8.828673E-03          | 9.691358E-05                                    |
| 0.597       | 3.156446E-02       | 3.008209E-04                                    | 8.926294E-03          | 9.762068E-05                                    |
| 0.598       | 3.186696E-02       | 3.024970E-04                                    | 9.024623E-03          | 9.832945E-05                                    |

R. C. G. Leibel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^*(\lambda_n)$ | $\eta_R^*(\lambda_n) - \eta_R^*(\lambda_{n-1})$ | $\eta_Q^*(\lambda_n)$ | $\eta_Q^*(\lambda_n) - \eta_Q^*(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.599       | 3.217113E-02          | 3.041734E-04                                    | 9.123663E-03          | 9.903986E-05                                    |
| 0.600       | 3.247698E-02          | 3.058492E-04                                    | 9.223415E-03          | 9.975190E-05                                    |
| 0.601       | 3.278845E-02          | 3.075244E-04                                    | 9.323880E-03          | 1.004656E-04                                    |
| 0.602       | 3.309370E-02          | 3.091988E-04                                    | 9.425061E-03          | 1.011808E-04                                    |
| 0.603       | 3.340458E-02          | 3.108725E-04                                    | 9.527952E-03          | 1.018976E-04                                    |
| 0.604       | 3.371712E-02          | 3.125454E-04                                    | 9.632957E-03          | 1.026160E-04                                    |
| 0.605       | 3.403134E-02          | 3.142174E-04                                    | 9.739911E-03          | 1.033359E-04                                    |
| 0.606       | 3.434472E-02          | 3.158885E-04                                    | 9.848696E-03          | 1.040573E-04                                    |
| 0.607       | 3.466647E-02          | 3.175586E-04                                    | 9.958174E-03          | 1.047802E-04                                    |
| 0.608       | 3.498401E-02          | 3.192277E-04                                    | 1.006472E-02          | 1.055046E-04                                    |
| 0.609       | 3.530491E-02          | 3.208957E-04                                    | 1.015348E-02          | 1.062335E-04                                    |
| 0.610       | 3.562747E-02          | 3.225626E-04                                    | 1.026044E-02          | 1.069578E-04                                    |
| 0.611       | 3.595170E-02          | 3.242283E-04                                    | 1.036813E-02          | 1.077865E-04                                    |
| 0.612       | 3.627759E-02          | 3.258928E-04                                    | 1.047654E-02          | 1.084166E-04                                    |
| 0.613       | 3.660515E-02          | 3.275560E-04                                    | 1.058569E-02          | 1.091481E-04                                    |
| 0.614       | 3.693437E-02          | 3.292178E-04                                    | 1.069557E-02          | 1.098810E-04                                    |
| 0.615       | 3.726525E-02          | 3.308782E-04                                    | 1.080619E-02          | 1.106152E-04                                    |
| 0.616       | 3.759778E-02          | 3.325372E-04                                    | 1.091754E-02          | 1.113507E-04                                    |
| 0.617       | 3.793198E-02          | 3.341947E-04                                    | 1.102963E-02          | 1.120875E-04                                    |
| 0.618       | 3.826783E-02          | 3.358507E-04                                    | 1.114245E-02          | 1.128257E-04                                    |
| 0.619       | 3.860533E-02          | 3.375051E-04                                    | 1.125602E-02          | 1.135650E-04                                    |
| 0.620       | 3.894449E-02          | 3.391578E-04                                    | 1.137032E-02          | 1.143057E-04                                    |
| 0.621       | 3.928530E-02          | 3.408089E-04                                    | 1.148537E-02          | 1.150475E-04                                    |
| 0.622       | 3.962776E-02          | 3.424582E-04                                    | 1.160116E-02          | 1.157906E-04                                    |
| 0.623       | 3.997186E-02          | 3.441058E-04                                    | 1.171770E-02          | 1.165349E-04                                    |
| 0.624       | 4.031762E-02          | 3.457515E-04                                    | 1.183498E-02          | 1.172803E-04                                    |
| 0.625       | 4.066501E-02          | 3.473953E-04                                    | 1.195300E-02          | 1.180269E-04                                    |
| 0.626       | 4.101405E-02          | 3.490372E-04                                    | 1.207178E-02          | 1.187746E-04                                    |
| 0.627       | 4.136472E-02          | 3.506771E-04                                    | 1.219130E-02          | 1.195235E-04                                    |
| 0.628       | 4.171704E-02          | 3.523151E-04                                    | 1.231158E-02          | 1.202734E-04                                    |
| 0.629       | 4.207099E-02          | 3.539509E-04                                    | 1.243260E-02          | 1.210244E-04                                    |
| 0.630       | 4.242658E-02          | 3.555846E-04                                    | 1.255438E-02          | 1.217765E-04                                    |
| 0.631       | 4.278379E-02          | 3.572162E-04                                    | 1.267691E-02          | 1.225296E-04                                    |
| 0.632       | 4.314264E-02          | 3.588456E-04                                    | 1.280019E-02          | 1.232837E-04                                    |
| 0.633       | 4.350311E-02          | 3.604727E-04                                    | 1.292423E-02          | 1.240388E-04                                    |
| 0.634       | 4.386521E-02          | 3.620976E-04                                    | 1.304902E-02          | 1.247949E-04                                    |
| 0.635       | 4.422893E-02          | 3.637201E-04                                    | 1.317457E-02          | 1.255520E-04                                    |
| 0.636       | 4.459427E-02          | 3.653402E-04                                    | 1.330088E-02          | 1.263100E-04                                    |
| 0.637       | 4.496123E-02          | 3.669579E-04                                    | 1.342795E-02          | 1.270689E-04                                    |
| 0.638       | 4.532980E-02          | 3.685732E-04                                    | 1.355578E-02          | 1.278287E-04                                    |
| 0.639       | 4.569999E-02          | 3.701859E-04                                    | 1.368437E-02          | 1.285895E-04                                    |
| 0.640       | 4.607178E-02          | 3.717961E-04                                    | 1.381372E-02          | 1.293510E-04                                    |
| 0.641       | 4.644518E-02          | 3.734037E-04                                    | 1.394384E-02          | 1.301135E-04                                    |
| 0.642       | 4.682019E-02          | 3.750086E-04                                    | 1.407471E-02          | 1.308767E-04                                    |
| 0.643       | 4.719680E-02          | 3.766109E-04                                    | 1.420635E-02          | 1.316408E-04                                    |
| 0.644       | 4.757501E-02          | 3.782105E-04                                    | 1.433876E-02          | 1.324057E-04                                    |
| 0.645       | 4.795482E-02          | 3.798073E-04                                    | 1.447193E-02          | 1.331713E-04                                    |
| 0.646       | 4.833622E-02          | 3.814013E-04                                    | 1.460587E-02          | 1.339377E-04                                    |
| 0.647       | 4.871922E-02          | 3.829925E-04                                    | 1.474057E-02          | 1.347049E-04                                    |
| 0.648       | 4.910380E-02          | 3.845808E-04                                    | 1.487605E-02          | 1.354727E-04                                    |

R.F.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R(\lambda_n)$ | $\eta_R(\lambda_n) - \eta_R(\lambda_{n-1})$ | $\eta_G(\lambda_n)$ | $\eta_G(\lambda_n) - \eta_G(\lambda_{n-1})$ |
|-------------|---------------------|---------------------------------------------|---------------------|---------------------------------------------|
| 0.649       | 4.948996E-02        | 3.861662E-04                                | 1.501229E-02        | 1.362413E-04                                |
| 0.650       | 4.947771E-02        | 3.877486E-04                                | 1.514910E-02        | 1.370105E-04                                |
| 0.651       | 5.026704E-02        | 3.893281E-04                                | 1.528708E-02        | 1.377804E-04                                |
| 0.652       | 5.065794E-02        | 3.909065E-04                                | 1.542563E-02        | 1.385510E-04                                |
| 0.653       | 5.105042E-02        | 3.924778E-04                                | 1.556495E-02        | 1.393222E-04                                |
| 0.654       | 5.144447E-02        | 3.940481E-04                                | 1.570505E-02        | 1.400939E-04                                |
| 0.655       | 5.184009E-02        | 3.956152E-04                                | 1.584591E-02        | 1.408663E-04                                |
| 0.656       | 5.223726E-02        | 3.971791E-04                                | 1.598755E-02        | 1.416392E-04                                |
| 0.657       | 5.263600E-02        | 3.987398E-04                                | 1.612796E-02        | 1.424127E-04                                |
| 0.658       | 5.303630E-02        | 4.002972E-04                                | 1.627315E-02        | 1.431868E-04                                |
| 0.659       | 5.343815E-02        | 4.018514E-04                                | 1.641711E-02        | 1.439613E-04                                |
| 0.660       | 5.384155E-02        | 4.034022E-04                                | 1.656185E-02        | 1.447364E-04                                |
| 0.661       | 5.424650E-02        | 4.049497E-04                                | 1.670736E-02        | 1.455119E-04                                |
| 0.662       | 5.465300E-02        | 4.064938E-04                                | 1.685365E-02        | 1.462879E-04                                |
| 0.663       | 5.506103E-02        | 4.080344E-04                                | 1.700071E-02        | 1.470643E-04                                |
| 0.664       | 5.547060E-02        | 4.095717E-04                                | 1.714855E-02        | 1.478412E-04                                |
| 0.665       | 5.588171E-02        | 4.111054E-04                                | 1.729717E-02        | 1.486184E-04                                |
| 0.666       | 5.629435E-02        | 4.126355E-04                                | 1.744657E-02        | 1.493961E-04                                |
| 0.667       | 5.670851E-02        | 4.141622E-04                                | 1.759674E-02        | 1.501741E-04                                |
| 0.668       | 5.712419E-02        | 4.156852E-04                                | 1.774769E-02        | 1.509525E-04                                |
| 0.669       | 5.754140E-02        | 4.172046E-04                                | 1.789943E-02        | 1.517312E-04                                |
| 0.670       | 5.796012E-02        | 4.187203E-04                                | 1.805194E-02        | 1.525103E-04                                |
| 0.671       | 5.838035E-02        | 4.202324E-04                                | 1.820523E-02        | 1.532896E-04                                |
| 0.672       | 5.880209E-02        | 4.217407E-04                                | 1.835930E-02        | 1.540693E-04                                |
| 0.673       | 5.922534E-02        | 4.232453E-04                                | 1.851414E-02        | 1.548492E-04                                |
| 0.674       | 5.965008E-02        | 4.247461E-04                                | 1.866977E-02        | 1.556294E-04                                |
| 0.675       | 6.007632E-02        | 4.262431E-04                                | 1.882618E-02        | 1.564097E-04                                |
| 0.676       | 6.050406E-02        | 4.277362E-04                                | 1.898337E-02        | 1.571904E-04                                |
| 0.677       | 6.093329E-02        | 4.292255E-04                                | 1.914135E-02        | 1.579712E-04                                |
| 0.678       | 6.136400E-02        | 4.307109E-04                                | 1.930010E-02        | 1.587522E-04                                |
| 0.679       | 6.179619E-02        | 4.321923E-04                                | 1.945963E-02        | 1.595333E-04                                |
| 0.680       | 6.222986E-02        | 4.336698E-04                                | 1.961995E-02        | 1.603146E-04                                |
| 0.681       | 6.266500E-02        | 4.351433E-04                                | 1.978104E-02        | 1.610961E-04                                |
| 0.682       | 6.310162E-02        | 4.366128E-04                                | 1.994292E-02        | 1.618776E-04                                |
| 0.683       | 6.353969E-02        | 4.380783E-04                                | 2.010558E-02        | 1.626593E-04                                |
| 0.684       | 6.397923E-02        | 4.395397E-04                                | 2.026902E-02        | 1.634410E-04                                |
| 0.685       | 6.442023E-02        | 4.409970E-04                                | 2.043324E-02        | 1.642228E-04                                |
| 0.686       | 6.486268E-02        | 4.424501E-04                                | 2.059825E-02        | 1.650047E-04                                |
| 0.687       | 6.530658E-02        | 4.438992E-04                                | 2.076403E-02        | 1.657866E-04                                |
| 0.688       | 6.575192E-02        | 4.453440E-04                                | 2.093060E-02        | 1.665685E-04                                |
| 0.689       | 6.619871E-02        | 4.467847E-04                                | 2.109795E-02        | 1.673504E-04                                |
| 0.690       | 6.664693E-02        | 4.482211E-04                                | 2.126608E-02        | 1.681323E-04                                |
| 0.691       | 6.709658E-02        | 4.496533E-04                                | 2.143500E-02        | 1.689141E-04                                |
| 0.692       | 6.754766E-02        | 4.510812E-04                                | 2.160469E-02        | 1.696959E-04                                |
| 0.693       | 6.800017E-02        | 4.525048E-04                                | 2.177517E-02        | 1.704777E-04                                |
| 0.694       | 6.845409E-02        | 4.539241E-04                                | 2.194643E-02        | 1.712593E-04                                |
| 0.695       | 6.890943E-02        | 4.553390E-04                                | 2.211847E-02        | 1.720409E-04                                |
| 0.696       | 6.936618E-02        | 4.567496E-04                                | 2.229129E-02        | 1.728223E-04                                |
| 0.697       | 6.982434E-02        | 4.581558E-04                                | 2.246490E-02        | 1.736036E-04                                |
| 0.698       | 7.028390E-02        | 4.595576E-04                                | 2.263928E-02        | 1.743848E-04                                |

R. E. H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^1(\lambda_n)$ | $\eta_R^1(\lambda_n) - \eta_R^1(\lambda_{n-1})$ | $\eta_Q^1(\lambda_n)$ | $\eta_Q^1(\lambda_n) - \eta_Q^1(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.699       | 1.074485E-02          | 4.609549E-04                                    | 2.281445E-02          | 1.751658E-04                                    |
| 0.700       | 1.120720E-02          | 4.623478E-04                                    | 2.299040E-02          | 1.759467E-04                                    |
| 0.701       | 1.167093E-02          | 4.637362E-04                                    | 2.316712E-02          | 1.767273E-04                                    |
| 0.702       | 1.213605E-02          | 4.651201E-04                                    | 2.334463E-02          | 1.775077E-04                                    |
| 0.703       | 1.260255E-02          | 4.664995E-04                                    | 2.352292E-02          | 1.782880E-04                                    |
| 0.704       | 1.307043E-02          | 4.678744E-04                                    | 2.370199E-02          | 1.790679E-04                                    |
| 0.705       | 1.353967E-02          | 4.692446E-04                                    | 2.388183E-02          | 1.798477E-04                                    |
| 0.706       | 1.401028E-02          | 4.706103E-04                                    | 2.406246E-02          | 1.806271E-04                                    |
| 0.707       | 1.448225E-02          | 4.719714E-04                                    | 2.424387E-02          | 1.814063E-04                                    |
| 0.708       | 1.495558E-02          | 4.733279E-04                                    | 2.442605E-02          | 1.821852E-04                                    |
| 0.709       | 1.543026E-02          | 4.746798E-04                                    | 2.460902E-02          | 1.829637E-04                                    |
| 0.710       | 1.590629E-02          | 4.760269E-04                                    | 2.479276E-02          | 1.837420E-04                                    |
| 0.711       | 1.638366E-02          | 4.773694E-04                                    | 2.497728E-02          | 1.845199E-04                                    |
| 0.712       | 1.686237E-02          | 4.787073E-04                                    | 2.516258E-02          | 1.852974E-04                                    |
| 0.713       | 1.734241E-02          | 4.800403E-04                                    | 2.534865E-02          | 1.860746E-04                                    |
| 0.714       | 1.782377E-02          | 4.813687E-04                                    | 2.553550E-02          | 1.868514E-04                                    |
| 0.715       | 1.830647E-02          | 4.826923E-04                                    | 2.572313E-02          | 1.876278E-04                                    |
| 0.716       | 1.879048E-02          | 4.840112E-04                                    | 2.591153E-02          | 1.884037E-04                                    |
| 0.717       | 1.927580E-02          | 4.853252E-04                                    | 2.610071E-02          | 1.891793E-04                                    |
| 0.718       | 1.976244E-02          | 4.866345E-04                                    | 2.629067E-02          | 1.899544E-04                                    |
| 0.719       | 2.025036E-02          | 4.879390E-04                                    | 2.648140E-02          | 1.907290E-04                                    |
| 0.720       | 2.073962E-02          | 4.892386E-04                                    | 2.667290E-02          | 1.915032E-04                                    |
| 0.721       | 2.123015E-02          | 4.905334E-04                                    | 2.686518E-02          | 1.922769E-04                                    |
| 0.722       | 2.172197E-02          | 4.918233E-04                                    | 2.705823E-02          | 1.930500E-04                                    |
| 0.723       | 2.221508E-02          | 4.931083E-04                                    | 2.725205E-02          | 1.938227E-04                                    |
| 0.724       | 2.270947E-02          | 4.943885E-04                                    | 2.744664E-02          | 1.945948E-04                                    |
| 0.725       | 2.320513E-02          | 4.956637E-04                                    | 2.764201E-02          | 1.953664E-04                                    |
| 0.726       | 2.370207E-02          | 4.969340E-04                                    | 2.783815E-02          | 1.961375E-04                                    |
| 0.727       | 2.420027E-02          | 4.981994E-04                                    | 2.803506E-02          | 1.969080E-04                                    |
| 0.728       | 2.469973E-02          | 4.994599E-04                                    | 2.823273E-02          | 1.976779E-04                                    |
| 0.729       | 2.520044E-02          | 5.007153E-04                                    | 2.843118E-02          | 1.984472E-04                                    |
| 0.730       | 2.570241E-02          | 5.019658E-04                                    | 2.863040E-02          | 1.992159E-04                                    |
| 0.731       | 2.620562E-02          | 5.032114E-04                                    | 2.883038E-02          | 1.999839E-04                                    |
| 0.732       | 2.671007E-02          | 5.044519E-04                                    | 2.903113E-02          | 2.007514E-04                                    |
| 0.733       | 2.721576E-02          | 5.056874E-04                                    | 2.923265E-02          | 2.015182E-04                                    |
| 0.734       | 2.772268E-02          | 5.069179E-04                                    | 2.943493E-02          | 2.022843E-04                                    |
| 0.735       | 2.823082E-02          | 5.081433E-04                                    | 2.963798E-02          | 2.030498E-04                                    |
| 0.736       | 2.874018E-02          | 5.093637E-04                                    | 2.984180E-02          | 2.038145E-04                                    |
| 0.737       | 2.925076E-02          | 5.105791E-04                                    | 3.004638E-02          | 2.045786E-04                                    |
| 0.738       | 2.976255E-02          | 5.117894E-04                                    | 3.025172E-02          | 2.053420E-04                                    |
| 0.739       | 3.027555E-02          | 5.129946E-04                                    | 3.045782E-02          | 2.061046E-04                                    |
| 0.740       | 3.078974E-02          | 5.141947E-04                                    | 3.066469E-02          | 2.068665E-04                                    |
| 0.741       | 3.130513E-02          | 5.153897E-04                                    | 3.087232E-02          | 2.076277E-04                                    |
| 0.742       | 3.182171E-02          | 5.165796E-04                                    | 3.108071E-02          | 2.083881E-04                                    |
| 0.743       | 3.233947E-02          | 5.177644E-04                                    | 3.128985E-02          | 2.091477E-04                                    |
| 0.744       | 3.285842E-02          | 5.189441E-04                                    | 3.149976E-02          | 2.099065E-04                                    |
| 0.745       | 3.337854E-02          | 5.201186E-04                                    | 3.171042E-02          | 2.106646E-04                                    |
| 0.746       | 3.389982E-02          | 5.212879E-04                                    | 3.192185E-02          | 2.114218E-04                                    |
| 0.747       | 3.442228E-02          | 5.224522E-04                                    | 3.213402E-02          | 2.121782E-04                                    |
| 0.748       | 3.494589E-02          | 5.236112E-04                                    | 3.234696E-02          | 2.129338E-04                                    |

R. F. H. Gebel, Cumulative Blackbody Functions.

| $\lambda_n$ | $\eta_K(\lambda_n)$ | $\eta_K(\lambda_n) - \eta_K(\lambda_{n-1})$ | $\eta_Q(\lambda_n)$ | $\eta_Q(\lambda_n) - \eta_Q(\lambda_{n-1})$ |
|-------------|---------------------|---------------------------------------------|---------------------|---------------------------------------------|
| 0.749       | 9.547065E-02        | 5.247651E-04                                | 3.256065E-02        | 2.136885E-04                                |
| 0.750       | 9.599657E-02        | 5.259138E-04                                | 3.277509E-02        | 2.144424E-04                                |
| 0.751       | 9.652362E-02        | 5.270573E-04                                | 3.299029E-02        | 2.151954E-04                                |
| 0.752       | 9.705182E-02        | 5.281956E-04                                | 3.320623E-02        | 2.159475E-04                                |
| 0.753       | 9.758115E-02        | 5.293284E-04                                | 3.342293E-02        | 2.166988E-04                                |
| 0.754       | 9.811161E-02        | 5.304567E-04                                | 3.364038E-02        | 2.174491E-04                                |
| 0.755       | 9.864318E-02        | 5.315794E-04                                | 3.385858E-02        | 2.181985E-04                                |
| 0.756       | 9.917588E-02        | 5.326968E-04                                | 3.407753E-02        | 2.189470E-04                                |
| 0.757       | 9.970969E-02        | 5.338091E-04                                | 3.429722E-02        | 2.196946E-04                                |
| 0.758       | 1.002446E-01        | 5.349161E-04                                | 3.451766E-02        | 2.204412E-04                                |
| 0.759       | 1.007806E-01        | 5.360179E-04                                | 3.473885E-02        | 2.211868E-04                                |
| 0.760       | 1.013177E-01        | 5.371144E-04                                | 3.496078E-02        | 2.219315E-04                                |
| 0.761       | 1.018559E-01        | 5.382057E-04                                | 3.518346E-02        | 2.226752E-04                                |
| 0.762       | 1.023952E-01        | 5.392917E-04                                | 3.540687E-02        | 2.234180E-04                                |
| 0.763       | 1.029356E-01        | 5.403725E-04                                | 3.563103E-02        | 2.241597E-04                                |
| 0.764       | 1.034771E-01        | 5.414480E-04                                | 3.585593E-02        | 2.249004E-04                                |
| 0.765       | 1.040196E-01        | 5.425182E-04                                | 3.608157E-02        | 2.256401E-04                                |
| 0.766       | 1.045632E-01        | 5.435832E-04                                | 3.630795E-02        | 2.263787E-04                                |
| 0.767       | 1.051078E-01        | 5.446428E-04                                | 3.653507E-02        | 2.271163E-04                                |
| 0.768       | 1.056535E-01        | 5.456972E-04                                | 3.676292E-02        | 2.278529E-04                                |
| 0.769       | 1.062002E-01        | 5.467463E-04                                | 3.699151E-02        | 2.285884E-04                                |
| 0.770       | 1.067480E-01        | 5.477902E-04                                | 3.722083E-02        | 2.293228E-04                                |
| 0.771       | 1.072969E-01        | 5.488287E-04                                | 3.745089E-02        | 2.300562E-04                                |
| 0.772       | 1.078467E-01        | 5.498619E-04                                | 3.768168E-02        | 2.307884E-04                                |
| 0.773       | 1.083976E-01        | 5.508899E-04                                | 3.791320E-02        | 2.315196E-04                                |
| 0.774       | 1.089495E-01        | 5.519125E-04                                | 3.814545E-02        | 2.322496E-04                                |
| 0.775       | 1.095025E-01        | 5.529298E-04                                | 3.837842E-02        | 2.329785E-04                                |
| 0.776       | 1.100564E-01        | 5.539419E-04                                | 3.861213E-02        | 2.337063E-04                                |
| 0.777       | 1.106113E-01        | 5.549486E-04                                | 3.884656E-02        | 2.344329E-04                                |
| 0.778       | 1.111673E-01        | 5.559500E-04                                | 3.908172E-02        | 2.351584E-04                                |
| 0.779       | 1.117242E-01        | 5.569461E-04                                | 3.931761E-02        | 2.358828E-04                                |
| 0.780       | 1.122822E-01        | 5.579369E-04                                | 3.955421E-02        | 2.366059E-04                                |
| 0.781       | 1.128411E-01        | 5.589224E-04                                | 3.979154E-02        | 2.373279E-04                                |
| 0.782       | 1.134010E-01        | 5.599025E-04                                | 4.002959E-02        | 2.380487E-04                                |
| 0.783       | 1.139619E-01        | 5.608774E-04                                | 4.026836E-02        | 2.387683E-04                                |
| 0.784       | 1.145237E-01        | 5.618469E-04                                | 4.050784E-02        | 2.394867E-04                                |
| 0.785       | 1.150865E-01        | 5.628112E-04                                | 4.074805E-02        | 2.402039E-04                                |
| 0.786       | 1.156503E-01        | 5.637701E-04                                | 4.098897E-02        | 2.409199E-04                                |
| 0.787       | 1.162150E-01        | 5.647237E-04                                | 4.123060E-02        | 2.416346E-04                                |
| 0.788       | 1.167807E-01        | 5.656719E-04                                | 4.147295E-02        | 2.423481E-04                                |
| 0.789       | 1.173473E-01        | 5.666149E-04                                | 4.171601E-02        | 2.430603E-04                                |
| 0.790       | 1.179149E-01        | 5.675525E-04                                | 4.195978E-02        | 2.437713E-04                                |
| 0.791       | 1.184834E-01        | 5.684849E-04                                | 4.220426E-02        | 2.444811E-04                                |
| 0.792       | 1.190528E-01        | 5.694119E-04                                | 4.244945E-02        | 2.451895E-04                                |
| 0.793       | 1.196231E-01        | 5.703336E-04                                | 4.269535E-02        | 2.458967E-04                                |
| 0.794       | 1.201944E-01        | 5.712500E-04                                | 4.294195E-02        | 2.466026E-04                                |
| 0.795       | 1.207665E-01        | 5.721611E-04                                | 4.318926E-02        | 2.473071E-04                                |
| 0.796       | 1.213396E-01        | 5.730669E-04                                | 4.343727E-02        | 2.480104E-04                                |
| 0.797       | 1.219136E-01        | 5.739674E-04                                | 4.368598E-02        | 2.487124E-04                                |
| 0.798       | 1.224884E-01        | 5.748625E-04                                | 4.393539E-02        | 2.494130E-04                                |

R. F. H. Geibel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R(\lambda_n)$ | $\eta_R(\lambda_n) - \eta_R(\lambda_{n-1})$ | $\eta_Q(\lambda_n)$ | $\eta_Q(\lambda_n) - \eta_Q(\lambda_{n-1})$ |
|-------------|---------------------|---------------------------------------------|---------------------|---------------------------------------------|
| 0.799       | 1.230642E-01        | 5.757524E-04                                | 4.418551E-02        | 2.501123E-04                                |
| 0.800       | 1.236608E-01        | 5.766370E-04                                | 4.443632E-02        | 2.508103E-04                                |
| 0.801       | 1.242183E-01        | 5.775162E-04                                | 4.468782E-02        | 2.515069E-04                                |
| 0.802       | 1.247967E-01        | 5.783902E-04                                | 4.494003E-02        | 2.522022E-04                                |
| 0.803       | 1.253760E-01        | 5.792549E-04                                | 4.519292E-02        | 2.528961E-04                                |
| 0.804       | 1.259561E-01        | 5.801223E-04                                | 4.544651E-02        | 2.535887E-04                                |
| 0.805       | 1.265371E-01        | 5.809804E-04                                | 4.570079E-02        | 2.542798E-04                                |
| 0.806       | 1.271189E-01        | 5.818332E-04                                | 4.595576E-02        | 2.549696E-04                                |
| 0.807       | 1.277016E-01        | 5.826807E-04                                | 4.621142E-02        | 2.556580E-04                                |
| 0.808       | 1.282851E-01        | 5.835230E-04                                | 4.646776E-02        | 2.563450E-04                                |
| 0.809       | 1.288695E-01        | 5.843600E-04                                | 4.672479E-02        | 2.570306E-04                                |
| 0.810       | 1.294547E-01        | 5.851917E-04                                | 4.698251E-02        | 2.577148E-04                                |
| 0.811       | 1.300407E-01        | 5.860182E-04                                | 4.724091E-02        | 2.583976E-04                                |
| 0.812       | 1.306275E-01        | 5.868394E-04                                | 4.749998E-02        | 2.590790E-04                                |
| 0.813       | 1.312152E-01        | 5.876553E-04                                | 4.775974E-02        | 2.597589E-04                                |
| 0.814       | 1.318036E-01        | 5.884660E-04                                | 4.802018E-02        | 2.604374E-04                                |
| 0.815       | 1.323929E-01        | 5.892714E-04                                | 4.828130E-02        | 2.611144E-04                                |
| 0.816       | 1.329830E-01        | 5.900716E-04                                | 4.854309E-02        | 2.617900E-04                                |
| 0.817       | 1.335738E-01        | 5.908666E-04                                | 4.880555E-02        | 2.624642E-04                                |
| 0.818       | 1.341655E-01        | 5.916563E-04                                | 4.906869E-02        | 2.631368E-04                                |
| 0.819       | 1.347579E-01        | 5.924408E-04                                | 4.933249E-02        | 2.638080E-04                                |
| 0.820       | 1.353512E-01        | 5.932200E-04                                | 4.959697E-02        | 2.644778E-04                                |
| 0.821       | 1.359452E-01        | 5.939941E-04                                | 4.986212E-02        | 2.651460E-04                                |
| 0.822       | 1.365399E-01        | 5.947629E-04                                | 5.012793E-02        | 2.658128E-04                                |
| 0.823       | 1.371354E-01        | 5.955255E-04                                | 5.039441E-02        | 2.664780E-04                                |
| 0.824       | 1.377317E-01        | 5.962850E-04                                | 5.066155E-02        | 2.671418E-04                                |
| 0.825       | 1.383288E-01        | 5.970382E-04                                | 5.092935E-02        | 2.678041E-04                                |
| 0.826       | 1.389266E-01        | 5.977862E-04                                | 5.119782E-02        | 2.684648E-04                                |
| 0.827       | 1.395251E-01        | 5.985291E-04                                | 5.146694E-02        | 2.691240E-04                                |
| 0.828       | 1.401244E-01        | 5.992667E-04                                | 5.173673E-02        | 2.697817E-04                                |
| 0.829       | 1.407244E-01        | 5.999992E-04                                | 5.200716E-02        | 2.704379E-04                                |
| 0.830       | 1.413251E-01        | 6.007266E-04                                | 5.227826E-02        | 2.710926E-04                                |
| 0.831       | 1.419265E-01        | 6.014487E-04                                | 5.255000E-02        | 2.717457E-04                                |
| 0.832       | 1.425287E-01        | 6.021658E-04                                | 5.282240E-02        | 2.723972E-04                                |
| 0.833       | 1.431316E-01        | 6.028776E-04                                | 5.309545E-02        | 2.730472E-04                                |
| 0.834       | 1.437352E-01        | 6.035844E-04                                | 5.336914E-02        | 2.736957E-04                                |
| 0.835       | 1.443394E-01        | 6.042860E-04                                | 5.364348E-02        | 2.743426E-04                                |
| 0.836       | 1.449444E-01        | 6.049824E-04                                | 5.391877E-02        | 2.749879E-04                                |
| 0.837       | 1.455501E-01        | 6.056738E-04                                | 5.419417E-02        | 2.756317E-04                                |
| 0.838       | 1.461565E-01        | 6.063601E-04                                | 5.447038E-02        | 2.762738E-04                                |
| 0.839       | 1.467635E-01        | 6.070412E-04                                | 5.474729E-02        | 2.769145E-04                                |
| 0.840       | 1.473712E-01        | 6.077173E-04                                | 5.502485E-02        | 2.775535E-04                                |
| 0.841       | 1.479796E-01        | 6.083882E-04                                | 5.530304E-02        | 2.781909E-04                                |
| 0.842       | 1.485887E-01        | 6.090541E-04                                | 5.558186E-02        | 2.788267E-04                                |
| 0.843       | 1.491984E-01        | 6.097149E-04                                | 5.586132E-02        | 2.794609E-04                                |
| 0.844       | 1.498087E-01        | 6.103707E-04                                | 5.614142E-02        | 2.800936E-04                                |
| 0.845       | 1.504198E-01        | 6.110213E-04                                | 5.642214E-02        | 2.807246E-04                                |
| 0.846       | 1.510314E-01        | 6.116670E-04                                | 5.670350E-02        | 2.813540E-04                                |
| 0.847       | 1.516437E-01        | 6.123076E-04                                | 5.698548E-02        | 2.819817E-04                                |
| 0.848       | 1.522567E-01        | 6.129432E-04                                | 5.726809E-02        | 2.826079E-04                                |

R. F. H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_M(\lambda_n)$ | $\eta_M(\lambda_n) - \eta_M(\lambda_{n-1})$ | $\eta_Q(\lambda_n)$ | $\eta_Q(\lambda_n) - \eta_Q(\lambda_{n-1})$ |
|-------------|---------------------|---------------------------------------------|---------------------|---------------------------------------------|
| 0.849       | 1.528703E-01        | 6.135737E-04                                | 5.755132E-02        | 2.832324E-04                                |
| 0.850       | 1.534845E-01        | 6.141993E-04                                | 5.783517E-02        | 2.838553E-04                                |
| 0.851       | 1.540993E-01        | 6.148198E-04                                | 5.811965E-02        | 2.844766E-04                                |
| 0.852       | 1.547147E-01        | 6.154353E-04                                | 5.840475E-02        | 2.850962E-04                                |
| 0.853       | 1.553308E-01        | 6.160459E-04                                | 5.869046E-02        | 2.857142E-04                                |
| 0.854       | 1.559474E-01        | 6.166514E-04                                | 5.897679E-02        | 2.863305E-04                                |
| 0.855       | 1.565647E-01        | 6.172520E-04                                | 5.926374E-02        | 2.869455E-04                                |
| 0.856       | 1.571825E-01        | 6.178477E-04                                | 5.955129E-02        | 2.875582E-04                                |
| 0.857       | 1.578009E-01        | 6.184383E-04                                | 5.983946E-02        | 2.881696E-04                                |
| 0.858       | 1.584200E-01        | 6.190241E-04                                | 6.012824E-02        | 2.887793E-04                                |
| 0.859       | 1.590396E-01        | 6.196049E-04                                | 6.041763E-02        | 2.893873E-04                                |
| 0.860       | 1.596598E-01        | 6.201808E-04                                | 6.070762E-02        | 2.899937E-04                                |
| 0.861       | 1.602805E-01        | 6.207517E-04                                | 6.099822E-02        | 2.905984E-04                                |
| 0.862       | 1.609018E-01        | 6.213178E-04                                | 6.128942E-02        | 2.912014E-04                                |
| 0.863       | 1.615237E-01        | 6.218790E-04                                | 6.158123E-02        | 2.918027E-04                                |
| 0.864       | 1.621461E-01        | 6.224352E-04                                | 6.187363E-02        | 2.924024E-04                                |
| 0.865       | 1.627691E-01        | 6.229867E-04                                | 6.216663E-02        | 2.930003E-04                                |
| 0.866       | 1.633927E-01        | 6.235332E-04                                | 6.246023E-02        | 2.935966E-04                                |
| 0.867       | 1.640167E-01        | 6.240749E-04                                | 6.275442E-02        | 2.941912E-04                                |
| 0.868       | 1.646413E-01        | 6.246117E-04                                | 6.304920E-02        | 2.947841E-04                                |
| 0.869       | 1.652665E-01        | 6.251437E-04                                | 6.334458E-02        | 2.953752E-04                                |
| 0.870       | 1.658922E-01        | 6.256709E-04                                | 6.364054E-02        | 2.959647E-04                                |
| 0.871       | 1.665184E-01        | 6.261933E-04                                | 6.393709E-02        | 2.965525E-04                                |
| 0.872       | 1.671451E-01        | 6.267108E-04                                | 6.423423E-02        | 2.971385E-04                                |
| 0.873       | 1.677723E-01        | 6.272236E-04                                | 6.453196E-02        | 2.977229E-04                                |
| 0.874       | 1.684000E-01        | 6.277316E-04                                | 6.483026E-02        | 2.983055E-04                                |
| 0.875       | 1.690283E-01        | 6.282348E-04                                | 6.512915E-02        | 2.988864E-04                                |
| 0.876       | 1.696570E-01        | 6.287332E-04                                | 6.542861E-02        | 2.994656E-04                                |
| 0.877       | 1.702862E-01        | 6.292269E-04                                | 6.572866E-02        | 3.000431E-04                                |
| 0.878       | 1.709159E-01        | 6.297159E-04                                | 6.602927E-02        | 3.006188E-04                                |
| 0.879       | 1.715461E-01        | 6.302001E-04                                | 6.633047E-02        | 3.011928E-04                                |
| 0.880       | 1.721768E-01        | 6.306796E-04                                | 6.663223E-02        | 3.017651E-04                                |
| 0.881       | 1.728080E-01        | 6.311544E-04                                | 6.693457E-02        | 3.023356E-04                                |
| 0.882       | 1.734396E-01        | 6.316245E-04                                | 6.723747E-02        | 3.029045E-04                                |
| 0.883       | 1.740717E-01        | 6.320899E-04                                | 6.754094E-02        | 3.034715E-04                                |
| 0.884       | 1.747042E-01        | 6.325507E-04                                | 6.784498E-02        | 3.040369E-04                                |
| 0.885       | 1.753372E-01        | 6.330068E-04                                | 6.814958E-02        | 3.046005E-04                                |
| 0.886       | 1.759707E-01        | 6.334582E-04                                | 6.845474E-02        | 3.051623E-04                                |
| 0.887       | 1.766046E-01        | 6.339050E-04                                | 6.876047E-02        | 3.057224E-04                                |
| 0.888       | 1.772389E-01        | 6.343471E-04                                | 6.906675E-02        | 3.062807E-04                                |
| 0.889       | 1.778737E-01        | 6.347846E-04                                | 6.937358E-02        | 3.068373E-04                                |
| 0.890       | 1.785090E-01        | 6.352176E-04                                | 6.968098E-02        | 3.073922E-04                                |
| 0.891       | 1.791446E-01        | 6.356459E-04                                | 6.998892E-02        | 3.079453E-04                                |
| 0.892       | 1.797807E-01        | 6.360697E-04                                | 7.029742E-02        | 3.084966E-04                                |
| 0.893       | 1.804172E-01        | 6.364888E-04                                | 7.060646E-02        | 3.090462E-04                                |
| 0.894       | 1.810541E-01        | 6.369034E-04                                | 7.091606E-02        | 3.095940E-04                                |
| 0.895       | 1.816914E-01        | 6.373135E-04                                | 7.122620E-02        | 3.101400E-04                                |
| 0.896       | 1.823291E-01        | 6.377190E-04                                | 7.153688E-02        | 3.106843E-04                                |
| 0.897       | 1.829672E-01        | 6.381200E-04                                | 7.184811E-02        | 3.112268E-04                                |
| 0.898       | 1.836057E-01        | 6.385165E-04                                | 7.215988E-02        | 3.117676E-04                                |
| 0.899       | 1.842446E-01        | 6.389085E-04                                | 7.247218E-02        | 3.123066E-04                                |

R.K.H. Gezel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_K(\lambda_n)$ | $\eta_K(\lambda_n) - \eta_K(\lambda_{n-1})$ | $\eta_Q(\lambda_n)$ | $\eta_Q(\lambda_n) - \eta_Q(\lambda_{n-1})$ |
|-------------|---------------------|---------------------------------------------|---------------------|---------------------------------------------|
| 0.900       | 1.84487E-01         | 6.392960E-04                                | 7.278503E-02        | 3.128438E-04                                |
| 0.901       | 1.855216E-01        | 6.396790E-04                                | 7.309841E-02        | 3.133792E-04                                |
| 0.902       | 1.861637E-01        | 6.400576E-04                                | 7.341232E-02        | 3.139129E-04                                |
| 0.903       | 1.864041E-01        | 6.404317E-04                                | 7.372676E-02        | 3.144448E-04                                |
| 0.904       | 1.874449E-01        | 6.408013E-04                                | 7.404174E-02        | 3.149749E-04                                |
| 0.905       | 1.880861E-01        | 6.411665E-04                                | 7.435724E-02        | 3.155032E-04                                |
| 0.906       | 1.887276E-01        | 6.415274E-04                                | 7.467327E-02        | 3.160298E-04                                |
| 0.907       | 1.893695E-01        | 6.418938E-04                                | 7.498983E-02        | 3.165545E-04                                |
| 0.908       | 1.900117E-01        | 6.422358E-04                                | 7.530690E-02        | 3.170775E-04                                |
| 0.909       | 1.906543E-01        | 6.425834E-04                                | 7.562450E-02        | 3.175988E-04                                |
| 0.910       | 1.912972E-01        | 6.429267E-04                                | 7.594262E-02        | 3.181182E-04                                |
| 0.911       | 1.919405E-01        | 6.432656E-04                                | 7.626126E-02        | 3.186358E-04                                |
| 0.912       | 1.925841E-01        | 6.436001E-04                                | 7.658041E-02        | 3.191517E-04                                |
| 0.913       | 1.932280E-01        | 6.439304E-04                                | 7.690008E-02        | 3.196658E-04                                |
| 0.914       | 1.938723E-01        | 6.442563E-04                                | 7.722025E-02        | 3.201781E-04                                |
| 0.915       | 1.945169E-01        | 6.445779E-04                                | 7.754094E-02        | 3.206886E-04                                |
| 0.916       | 1.951618E-01        | 6.448952E-04                                | 7.786214E-02        | 3.211973E-04                                |
| 0.917       | 1.958070E-01        | 6.452083E-04                                | 7.818384E-02        | 3.217042E-04                                |
| 0.918       | 1.964525E-01        | 6.455170E-04                                | 7.850605E-02        | 3.222093E-04                                |
| 0.919       | 1.970983E-01        | 6.458215E-04                                | 7.882876E-02        | 3.227127E-04                                |
| 0.920       | 1.977444E-01        | 6.461218E-04                                | 7.915198E-02        | 3.232142E-04                                |
| 0.921       | 1.983908E-01        | 6.464178E-04                                | 7.947569E-02        | 3.237140E-04                                |
| 0.922       | 1.990375E-01        | 6.467097E-04                                | 7.979991E-02        | 3.242120E-04                                |
| 0.923       | 1.996845E-01        | 6.469973E-04                                | 8.012461E-02        | 3.247081E-04                                |
| 0.924       | 2.003318E-01        | 6.472807E-04                                | 8.044981E-02        | 3.252025E-04                                |
| 0.925       | 2.009794E-01        | 6.475599E-04                                | 8.077551E-02        | 3.256951E-04                                |
| 0.926       | 2.016272E-01        | 6.478350E-04                                | 8.110170E-02        | 3.261859E-04                                |
| 0.927       | 2.022753E-01        | 6.481059E-04                                | 8.142837E-02        | 3.266749E-04                                |
| 0.928       | 2.029237E-01        | 6.483727E-04                                | 8.175553E-02        | 3.271621E-04                                |
| 0.929       | 2.035723E-01        | 6.486354E-04                                | 8.208318E-02        | 3.276475E-04                                |
| 0.930       | 2.042212E-01        | 6.488939E-04                                | 8.241131E-02        | 3.281311E-04                                |
| 0.931       | 2.048704E-01        | 6.491483E-04                                | 8.273993E-02        | 3.286129E-04                                |
| 0.932       | 2.055198E-01        | 6.493987E-04                                | 8.306902E-02        | 3.290930E-04                                |
| 0.933       | 2.061694E-01        | 6.496449E-04                                | 8.339859E-02        | 3.295712E-04                                |
| 0.934       | 2.068193E-01        | 6.498872E-04                                | 8.372864E-02        | 3.300476E-04                                |
| 0.935       | 2.074694E-01        | 6.501253E-04                                | 8.405916E-02        | 3.305223E-04                                |
| 0.936       | 2.081198E-01        | 6.503594E-04                                | 8.439015E-02        | 3.309951E-04                                |
| 0.937       | 2.087704E-01        | 6.505895E-04                                | 8.472162E-02        | 3.314662E-04                                |
| 0.938       | 2.094212E-01        | 6.508156E-04                                | 8.505356E-02        | 3.319354E-04                                |
| 0.939       | 2.100722E-01        | 6.510377E-04                                | 8.538596E-02        | 3.324029E-04                                |
| 0.940       | 2.107235E-01        | 6.512558E-04                                | 8.571883E-02        | 3.328685E-04                                |
| 0.941       | 2.113750E-01        | 6.514699E-04                                | 8.605216E-02        | 3.333324E-04                                |
| 0.942       | 2.120266E-01        | 6.516801E-04                                | 8.638595E-02        | 3.337945E-04                                |
| 0.943       | 2.126785E-01        | 6.518863E-04                                | 8.672021E-02        | 3.342547E-04                                |
| 0.944       | 2.133306E-01        | 6.520886E-04                                | 8.705492E-02        | 3.347132E-04                                |
| 0.945       | 2.139829E-01        | 6.522870E-04                                | 8.739009E-02        | 3.351699E-04                                |
| 0.946       | 2.146354E-01        | 6.524814E-04                                | 8.772572E-02        | 3.356248E-04                                |
| 0.947       | 2.152881E-01        | 6.526720E-04                                | 8.806180E-02        | 3.360779E-04                                |
| 0.948       | 2.159409E-01        | 6.528587E-04                                | 8.839832E-02        | 3.365292E-04                                |
| 0.949       | 2.165940E-01        | 6.530415E-04                                | 8.873530E-02        | 3.369787E-04                                |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 0.950       | 2.172472E-01          | 6.532205E-04                                    | 8.907273E-02          | 3.374265E-04                                    |
| 0.951       | 2.179006E-01          | 6.533956E-04                                    | 8.941060E-02          | 3.378724E-04                                    |
| 0.952       | 2.185541E-01          | 6.535669E-04                                    | 8.974892E-02          | 3.383165E-04                                    |
| 0.953       | 2.192079E-01          | 6.537354E-04                                    | 9.008768E-02          | 3.387589E-04                                    |
| 0.954       | 2.198618E-01          | 6.538981E-04                                    | 9.042688E-02          | 3.391994E-04                                    |
| 0.955       | 2.205158E-01          | 6.540580E-04                                    | 9.076651E-02          | 3.396382E-04                                    |
| 0.956       | 2.211700E-01          | 6.542142E-04                                    | 9.110659E-02          | 3.400752E-04                                    |
| 0.957       | 2.218244E-01          | 6.543665E-04                                    | 9.144710E-02          | 3.405104E-04                                    |
| 0.958       | 2.224789E-01          | 6.545151E-04                                    | 9.178804E-02          | 3.409438E-04                                    |
| 0.959       | 2.231336E-01          | 6.546600E-04                                    | 9.212942E-02          | 3.413754E-04                                    |
| 0.960       | 2.237884E-01          | 6.548012E-04                                    | 9.247122E-02          | 3.418053E-04                                    |
| 0.961       | 2.244433E-01          | 6.549386E-04                                    | 9.281346E-02          | 3.422333E-04                                    |
| 0.962       | 2.250984E-01          | 6.550724E-04                                    | 9.315612E-02          | 3.426596E-04                                    |
| 0.963       | 2.257536E-01          | 6.552025E-04                                    | 9.349920E-02          | 3.430841E-04                                    |
| 0.964       | 2.264089E-01          | 6.553289E-04                                    | 9.384271E-02          | 3.435068E-04                                    |
| 0.965       | 2.270644E-01          | 6.554516E-04                                    | 9.418664E-02          | 3.439278E-04                                    |
| 0.966       | 2.277200E-01          | 6.555708E-04                                    | 9.453098E-02          | 3.443469E-04                                    |
| 0.967       | 2.283756E-01          | 6.556862E-04                                    | 9.487575E-02          | 3.447643E-04                                    |
| 0.968       | 2.290314E-01          | 6.557981E-04                                    | 9.522093E-02          | 3.451799E-04                                    |
| 0.969       | 2.296873E-01          | 6.559064E-04                                    | 9.556652E-02          | 3.455937E-04                                    |
| 0.970       | 2.303434E-01          | 6.560111E-04                                    | 9.591253E-02          | 3.460057E-04                                    |
| 0.971       | 2.309995E-01          | 6.561122E-04                                    | 9.625894E-02          | 3.464160E-04                                    |
| 0.972       | 2.316557E-01          | 6.562097E-04                                    | 9.660577E-02          | 3.468245E-04                                    |
| 0.973       | 2.323120E-01          | 6.563037E-04                                    | 9.695300E-02          | 3.472313E-04                                    |
| 0.974       | 2.329684E-01          | 6.563942E-04                                    | 9.730064E-02          | 3.476362E-04                                    |
| 0.975       | 2.336249E-01          | 6.564811E-04                                    | 9.764868E-02          | 3.480394E-04                                    |
| 0.976       | 2.342814E-01          | 6.565645E-04                                    | 9.799712E-02          | 3.484408E-04                                    |
| 0.977       | 2.349381E-01          | 6.566445E-04                                    | 9.834596E-02          | 3.488405E-04                                    |
| 0.978       | 2.355948E-01          | 6.567209E-04                                    | 9.869519E-02          | 3.492384E-04                                    |
| 0.979       | 2.362516E-01          | 6.567939E-04                                    | 9.904483E-02          | 3.496345E-04                                    |
| 0.980       | 2.369084E-01          | 6.568634E-04                                    | 9.939486E-02          | 3.500289E-04                                    |
| 0.981       | 2.375654E-01          | 6.569295E-04                                    | 9.974528E-02          | 3.504215E-04                                    |
| 0.982       | 2.382224E-01          | 6.569922E-04                                    | 1.000961E-01          | 3.508123E-04                                    |
| 0.983       | 2.388794E-01          | 6.570514E-04                                    | 1.004473E-01          | 3.512014E-04                                    |
| 0.984       | 2.395365E-01          | 6.571072E-04                                    | 1.007989E-01          | 3.515887E-04                                    |
| 0.985       | 2.401937E-01          | 6.571597E-04                                    | 1.011509E-01          | 3.519743E-04                                    |
| 0.986       | 2.408509E-01          | 6.572087E-04                                    | 1.015032E-01          | 3.523581E-04                                    |
| 0.987       | 2.415081E-01          | 6.572545E-04                                    | 1.018560E-01          | 3.527402E-04                                    |
| 0.988       | 2.421654E-01          | 6.572968E-04                                    | 1.022091E-01          | 3.531205E-04                                    |
| 0.989       | 2.428228E-01          | 6.573358E-04                                    | 1.025626E-01          | 3.534991E-04                                    |
| 0.990       | 2.434801E-01          | 6.573715E-04                                    | 1.029164E-01          | 3.538759E-04                                    |
| 0.991       | 2.441376E-01          | 6.574039E-04                                    | 1.032707E-01          | 3.542510E-04                                    |
| 0.992       | 2.447950E-01          | 6.574330E-04                                    | 1.036253E-01          | 3.546243E-04                                    |
| 0.993       | 2.454524E-01          | 6.574588E-04                                    | 1.039803E-01          | 3.549959E-04                                    |
| 0.994       | 2.461099E-01          | 6.574813E-04                                    | 1.043357E-01          | 3.553658E-04                                    |
| 0.995       | 2.467674E-01          | 6.575006E-04                                    | 1.046914E-01          | 3.557339E-04                                    |
| 0.996       | 2.474249E-01          | 6.575166E-04                                    | 1.050475E-01          | 3.561003E-04                                    |
| 0.997       | 2.480825E-01          | 6.575294E-04                                    | 1.054040E-01          | 3.564649E-04                                    |
| 0.998       | 2.487400E-01          | 6.575390E-04                                    | 1.057608E-01          | 3.568278E-04                                    |
| 0.999       | 2.493976E-01          | 6.575453E-04                                    | 1.061180E-01          | 3.571890E-04                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 1.000       | 2.500551E-01          | 6.575485E-04                                    | 1.064756E-01          | 3.575485E-04                                    |
| 1.005       | 2.533428E-01          | 3.287679E-03                                    | 1.082686E-01          | 1.793074E-03                                    |
| 1.010       | 2.566301E-01          | 3.287288E-03                                    | 1.100704E-01          | 1.801802E-03                                    |
| 1.015       | 2.599166E-01          | 3.286511E-03                                    | 1.118807E-01          | 1.810316E-03                                    |
| 1.020       | 2.632019E-01          | 3.285358E-03                                    | 1.136994E-01          | 1.818618E-03                                    |
| 1.025       | 2.664858E-01          | 3.283837E-03                                    | 1.155261E-01          | 1.826708E-03                                    |
| 1.030       | 2.697677E-01          | 3.281955E-03                                    | 1.173607E-01          | 1.834589E-03                                    |
| 1.035       | 2.730475E-01          | 3.279721E-03                                    | 1.192029E-01          | 1.842261E-03                                    |
| 1.040       | 2.763246E-01          | 3.277142E-03                                    | 1.210526E-01          | 1.849727E-03                                    |
| 1.045       | 2.795988E-01          | 3.274226E-03                                    | 1.229096E-01          | 1.856987E-03                                    |
| 1.050       | 2.828698E-01          | 3.270981E-03                                    | 1.247737E-01          | 1.864044E-03                                    |
| 1.055       | 2.861372E-01          | 3.267414E-03                                    | 1.266446E-01          | 1.870899E-03                                    |
| 1.060       | 2.894008E-01          | 3.263533E-03                                    | 1.285221E-01          | 1.877554E-03                                    |
| 1.065       | 2.926601E-01          | 3.259346E-03                                    | 1.304061E-01          | 1.884011E-03                                    |
| 1.070       | 2.959150E-01          | 3.254859E-03                                    | 1.322964E-01          | 1.890271E-03                                    |
| 1.075       | 2.991650E-01          | 3.250080E-03                                    | 1.341927E-01          | 1.896336E-03                                    |
| 1.080       | 3.024101E-01          | 3.245016E-03                                    | 1.360950E-01          | 1.902209E-03                                    |
| 1.085       | 3.056497E-01          | 3.239675E-03                                    | 1.380029E-01          | 1.907890E-03                                    |
| 1.090       | 3.088838E-01          | 3.234063E-03                                    | 1.399162E-01          | 1.913382E-03                                    |
| 1.095       | 3.121120E-01          | 3.228137E-03                                    | 1.418349E-01          | 1.918687E-03                                    |
| 1.100       | 3.153340E-01          | 3.222054E-03                                    | 1.437587E-01          | 1.923807E-03                                    |
| 1.105       | 3.185497E-01          | 3.215672E-03                                    | 1.456875E-01          | 1.928743E-03                                    |
| 1.110       | 3.217588E-01          | 3.209046E-03                                    | 1.476210E-01          | 1.933498E-03                                    |
| 1.115       | 3.249609E-01          | 3.202184E-03                                    | 1.495590E-01          | 1.938073E-03                                    |
| 1.120       | 3.281560E-01          | 3.195091E-03                                    | 1.515015E-01          | 1.942472E-03                                    |
| 1.125       | 3.313438E-01          | 3.187774E-03                                    | 1.534482E-01          | 1.946695E-03                                    |
| 1.130       | 3.345240E-01          | 3.180239E-03                                    | 1.553989E-01          | 1.950744E-03                                    |
| 1.135       | 3.376965E-01          | 3.172494E-03                                    | 1.573536E-01          | 1.954623E-03                                    |
| 1.140       | 3.408611E-01          | 3.164543E-03                                    | 1.593119E-01          | 1.958332E-03                                    |
| 1.145       | 3.440175E-01          | 3.156392E-03                                    | 1.612730E-01          | 1.961874E-03                                    |
| 1.150       | 3.471655E-01          | 3.148049E-03                                    | 1.632390E-01          | 1.965251E-03                                    |
| 1.155       | 3.503050E-01          | 3.139518E-03                                    | 1.652075E-01          | 1.968465E-03                                    |
| 1.160       | 3.534358E-01          | 3.130805E-03                                    | 1.671790E-01          | 1.971519E-03                                    |
| 1.165       | 3.565578E-01          | 3.121916E-03                                    | 1.691534E-01          | 1.974413E-03                                    |
| 1.170       | 3.596706E-01          | 3.112856E-03                                    | 1.711306E-01          | 1.977151E-03                                    |
| 1.175       | 3.627742E-01          | 3.103631E-03                                    | 1.731103E-01          | 1.979734E-03                                    |
| 1.180       | 3.658685E-01          | 3.094246E-03                                    | 1.750925E-01          | 1.982164E-03                                    |
| 1.185       | 3.689532E-01          | 3.084707E-03                                    | 1.770769E-01          | 1.984444E-03                                    |
| 1.190       | 3.720282E-01          | 3.075018E-03                                    | 1.790635E-01          | 1.986576E-03                                    |
| 1.195       | 3.750934E-01          | 3.065185E-03                                    | 1.810521E-01          | 1.988561E-03                                    |
| 1.200       | 3.781486E-01          | 3.055212E-03                                    | 1.830425E-01          | 1.990402E-03                                    |
| 1.205       | 3.811937E-01          | 3.045105E-03                                    | 1.850346E-01          | 1.992100E-03                                    |
| 1.210       | 3.842286E-01          | 3.034869E-03                                    | 1.870282E-01          | 1.993659E-03                                    |
| 1.215       | 3.872531E-01          | 3.024507E-03                                    | 1.890233E-01          | 1.995079E-03                                    |
| 1.220       | 3.902671E-01          | 3.014024E-03                                    | 1.910197E-01          | 1.996363E-03                                    |
| 1.225       | 3.932705E-01          | 3.003426E-03                                    | 1.930172E-01          | 1.997513E-03                                    |
| 1.230       | 3.962633E-01          | 2.992717E-03                                    | 1.950157E-01          | 1.998531E-03                                    |
| 1.235       | 3.992452E-01          | 2.981900E-03                                    | 1.970151E-01          | 1.999419E-03                                    |
| 1.240       | 4.022161E-01          | 2.970980E-03                                    | 1.990153E-01          | 2.000178E-03                                    |
| 1.245       | 4.051761E-01          | 2.959962E-03                                    | 2.010161E-01          | 2.000812E-03                                    |
| 1.250       | 4.081249E-01          | 2.948848E-03                                    | 2.030174E-01          | 2.001321E-03                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 1.255       | 4.110626E-01          | 2.937645E-03                                    | 2.050191E-01          | 2.001708E-03                                    |
| 1.260       | 4.139889E-01          | 2.926354E-03                                    | 2.070211E-01          | 2.001975E-03                                    |
| 1.265       | 4.169039E-01          | 2.914981E-03                                    | 2.090232E-01          | 2.002124E-03                                    |
| 1.270       | 4.198075E-01          | 2.903529E-03                                    | 2.110254E-01          | 2.002156E-03                                    |
| 1.275       | 4.226995E-01          | 2.892001E-03                                    | 2.130275E-01          | 2.002073E-03                                    |
| 1.280       | 4.255799E-01          | 2.880401E-03                                    | 2.150293E-01          | 2.001878E-03                                    |
| 1.285       | 4.284486E-01          | 2.868734E-03                                    | 2.170309E-01          | 2.001573E-03                                    |
| 1.290       | 4.313056E-01          | 2.857001E-03                                    | 2.190321E-01          | 2.001158E-03                                    |
| 1.295       | 4.341508E-01          | 2.845206E-03                                    | 2.210327E-01          | 2.000636E-03                                    |
| 1.300       | 4.369842E-01          | 2.833354E-03                                    | 2.230327E-01          | 2.000009E-03                                    |
| 1.305       | 4.398056E-01          | 2.821447E-03                                    | 2.250320E-01          | 1.999279E-03                                    |
| 1.310       | 4.426151E-01          | 2.809487E-03                                    | 2.270305E-01          | 1.998446E-03                                    |
| 1.315       | 4.454126E-01          | 2.797479E-03                                    | 2.290280E-01          | 1.997514E-03                                    |
| 1.320       | 4.481980E-01          | 2.785425E-03                                    | 2.310244E-01          | 1.996484E-03                                    |
| 1.325       | 4.509713E-01          | 2.773329E-03                                    | 2.330198E-01          | 1.995358E-03                                    |
| 1.330       | 4.537325E-01          | 2.761192E-03                                    | 2.350139E-01          | 1.994137E-03                                    |
| 1.335       | 4.564815E-01          | 2.749019E-03                                    | 2.370068E-01          | 1.992823E-03                                    |
| 1.340       | 4.592183E-01          | 2.736811E-03                                    | 2.389982E-01          | 1.991417E-03                                    |
| 1.345       | 4.619429E-01          | 2.724571E-03                                    | 2.409881E-01          | 1.989922E-03                                    |
| 1.350       | 4.646552E-01          | 2.712302E-03                                    | 2.429764E-01          | 1.988340E-03                                    |
| 1.355       | 4.673552E-01          | 2.700007E-03                                    | 2.449631E-01          | 1.986670E-03                                    |
| 1.360       | 4.700429E-01          | 2.687687E-03                                    | 2.469480E-01          | 1.984917E-03                                    |
| 1.365       | 4.727183E-01          | 2.675346E-03                                    | 2.489311E-01          | 1.983080E-03                                    |
| 1.370       | 4.753812E-01          | 2.662986E-03                                    | 2.509123E-01          | 1.981161E-03                                    |
| 1.375       | 4.780318E-01          | 2.650608E-03                                    | 2.528914E-01          | 1.979163E-03                                    |
| 1.380       | 4.806701E-01          | 2.638216E-03                                    | 2.548685E-01          | 1.977087E-03                                    |
| 1.385       | 4.832959E-01          | 2.625811E-03                                    | 2.568435E-01          | 1.974933E-03                                    |
| 1.390       | 4.859093E-01          | 2.613396E-03                                    | 2.588162E-01          | 1.972704E-03                                    |
| 1.395       | 4.885102E-01          | 2.600973E-03                                    | 2.607866E-01          | 1.970401E-03                                    |
| 1.400       | 4.910988E-01          | 2.588543E-03                                    | 2.627546E-01          | 1.968026E-03                                    |
| 1.405       | 4.936749E-01          | 2.576109E-03                                    | 2.647202E-01          | 1.965580E-03                                    |
| 1.410       | 4.962386E-01          | 2.563673E-03                                    | 2.666832E-01          | 1.963065E-03                                    |
| 1.415       | 4.987898E-01          | 2.551236E-03                                    | 2.686437E-01          | 1.960482E-03                                    |
| 1.420       | 5.013286E-01          | 2.538800E-03                                    | 2.706015E-01          | 1.957831E-03                                    |
| 1.425       | 5.038550E-01          | 2.526369E-03                                    | 2.725567E-01          | 1.955116E-03                                    |
| 1.430       | 5.063689E-01          | 2.513940E-03                                    | 2.745090E-01          | 1.952337E-03                                    |
| 1.435       | 5.088704E-01          | 2.501519E-03                                    | 2.764585E-01          | 1.949495E-03                                    |
| 1.440       | 5.113595E-01          | 2.489106E-03                                    | 2.784051E-01          | 1.946592E-03                                    |
| 1.445       | 5.138362E-01          | 2.476702E-03                                    | 2.803487E-01          | 1.943629E-03                                    |
| 1.450       | 5.163005E-01          | 2.464310E-03                                    | 2.822893E-01          | 1.940607E-03                                    |
| 1.455       | 5.187525E-01          | 2.451931E-03                                    | 2.842268E-01          | 1.937528E-03                                    |
| 1.460       | 5.211920E-01          | 2.439566E-03                                    | 2.861612E-01          | 1.934393E-03                                    |
| 1.465       | 5.236193E-01          | 2.427216E-03                                    | 2.880924E-01          | 1.931203E-03                                    |
| 1.470       | 5.260341E-01          | 2.414884E-03                                    | 2.900204E-01          | 1.927960E-03                                    |
| 1.475       | 5.284367E-01          | 2.402569E-03                                    | 2.919451E-01          | 1.924664E-03                                    |
| 1.480       | 5.308270E-01          | 2.390275E-03                                    | 2.938664E-01          | 1.921317E-03                                    |
| 1.485       | 5.332050E-01          | 2.378001E-03                                    | 2.957843E-01          | 1.917920E-03                                    |
| 1.490       | 5.355707E-01          | 2.365750E-03                                    | 2.976988E-01          | 1.914474E-03                                    |
| 1.495       | 5.379243E-01          | 2.353522E-03                                    | 2.996098E-01          | 1.910981E-03                                    |
| 1.500       | 5.402656E-01          | 2.341318E-03                                    | 3.015172E-01          | 1.907441E-03                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 1.505       | 5.425947E-01          | 2.329140E-03                                    | 3.034211E-01          | 1.903855E-03                                    |
| 1.510       | 5.449117E-01          | 2.316989E-03                                    | 3.053213E-01          | 1.900225E-03                                    |
| 1.515       | 5.472166E-01          | 2.304866E-03                                    | 3.072178E-01          | 1.896552E-03                                    |
| 1.520       | 5.495093E-01          | 2.292771E-03                                    | 3.091107E-01          | 1.892836E-03                                    |
| 1.525       | 5.517900E-01          | 2.280706E-03                                    | 3.109998E-01          | 1.889079E-03                                    |
| 1.530       | 5.540587E-01          | 2.268671E-03                                    | 3.128850E-01          | 1.885283E-03                                    |
| 1.535       | 5.563154E-01          | 2.256668E-03                                    | 3.147665E-01          | 1.881447E-03                                    |
| 1.540       | 5.585601E-01          | 2.244698E-03                                    | 3.166441E-01          | 1.877573E-03                                    |
| 1.545       | 5.607929E-01          | 2.232761E-03                                    | 3.185177E-01          | 1.873661E-03                                    |
| 1.550       | 5.630137E-01          | 2.220858E-03                                    | 3.203874E-01          | 1.869714E-03                                    |
| 1.555       | 5.652227E-01          | 2.208990E-03                                    | 3.222532E-01          | 1.865731E-03                                    |
| 1.560       | 5.674199E-01          | 2.197158E-03                                    | 3.241149E-01          | 1.861714E-03                                    |
| 1.565       | 5.696052E-01          | 2.185362E-03                                    | 3.259725E-01          | 1.857664E-03                                    |
| 1.570       | 5.717788E-01          | 2.173603E-03                                    | 3.278261E-01          | 1.853581E-03                                    |
| 1.575       | 5.739407E-01          | 2.161883E-03                                    | 3.296756E-01          | 1.849467E-03                                    |
| 1.580       | 5.760909E-01          | 2.150201E-03                                    | 3.315209E-01          | 1.845322E-03                                    |
| 1.585       | 5.782295E-01          | 2.138558E-03                                    | 3.333621E-01          | 1.841147E-03                                    |
| 1.590       | 5.803564E-01          | 2.126955E-03                                    | 3.351990E-01          | 1.836943E-03                                    |
| 1.595       | 5.824718E-01          | 2.115392E-03                                    | 3.370317E-01          | 1.832711E-03                                    |
| 1.600       | 5.845757E-01          | 2.103871E-03                                    | 3.388602E-01          | 1.828452E-03                                    |
| 1.605       | 5.866681E-01          | 2.092391E-03                                    | 3.406843E-01          | 1.824167E-03                                    |
| 1.610       | 5.887490E-01          | 2.080953E-03                                    | 3.425042E-01          | 1.819856E-03                                    |
| 1.615       | 5.908186E-01          | 2.069558E-03                                    | 3.443197E-01          | 1.815520E-03                                    |
| 1.620       | 5.928768E-01          | 2.058205E-03                                    | 3.461309E-01          | 1.811160E-03                                    |
| 1.625       | 5.949237E-01          | 2.046897E-03                                    | 3.479376E-01          | 1.806776E-03                                    |
| 1.630       | 5.969593E-01          | 2.035632E-03                                    | 3.497400E-01          | 1.802370E-03                                    |
| 1.635       | 5.989837E-01          | 2.024412E-03                                    | 3.515379E-01          | 1.797942E-03                                    |
| 1.640       | 6.009970E-01          | 2.013236E-03                                    | 3.533314E-01          | 1.793493E-03                                    |
| 1.645       | 6.029991E-01          | 2.002106E-03                                    | 3.551205E-01          | 1.789024E-03                                    |
| 1.650       | 6.049901E-01          | 1.991022E-03                                    | 3.569050E-01          | 1.784535E-03                                    |
| 1.655       | 6.069701E-01          | 1.979983E-03                                    | 3.586850E-01          | 1.780027E-03                                    |
| 1.660       | 6.089391E-01          | 1.968991E-03                                    | 3.604605E-01          | 1.775501E-03                                    |
| 1.665       | 6.108971E-01          | 1.958045E-03                                    | 3.622315E-01          | 1.770957E-03                                    |
| 1.670       | 6.128443E-01          | 1.947146E-03                                    | 3.639979E-01          | 1.766396E-03                                    |
| 1.675       | 6.147806E-01          | 1.936294E-03                                    | 3.657597E-01          | 1.761819E-03                                    |
| 1.680       | 6.167060E-01          | 1.925490E-03                                    | 3.675169E-01          | 1.757226E-03                                    |
| 1.685       | 6.186208E-01          | 1.914734E-03                                    | 3.692695E-01          | 1.752618E-03                                    |
| 1.690       | 6.205248E-01          | 1.904025E-03                                    | 3.710175E-01          | 1.747995E-03                                    |
| 1.695       | 6.224182E-01          | 1.893365E-03                                    | 3.727609E-01          | 1.743359E-03                                    |
| 1.700       | 6.243009E-01          | 1.882753E-03                                    | 3.744996E-01          | 1.738709E-03                                    |
| 1.705       | 6.261731E-01          | 1.872190E-03                                    | 3.762337E-01          | 1.734046E-03                                    |
| 1.710       | 6.280348E-01          | 1.861675E-03                                    | 3.779630E-01          | 1.729372E-03                                    |
| 1.715       | 6.298860E-01          | 1.851210E-03                                    | 3.796877E-01          | 1.724686E-03                                    |
| 1.720       | 6.317268E-01          | 1.840794E-03                                    | 3.814077E-01          | 1.719989E-03                                    |
| 1.725       | 6.335572E-01          | 1.830426E-03                                    | 3.831230E-01          | 1.715281E-03                                    |
| 1.730       | 6.353773E-01          | 1.820109E-03                                    | 3.848335E-01          | 1.710563E-03                                    |
| 1.735       | 6.371872E-01          | 1.809841E-03                                    | 3.865394E-01          | 1.705836E-03                                    |
| 1.740       | 6.389868E-01          | 1.799622E-03                                    | 3.882405E-01          | 1.701100E-03                                    |
| 1.745       | 6.407762E-01          | 1.789453E-03                                    | 3.899368E-01          | 1.696356E-03                                    |
| 1.750       | 6.425556E-01          | 1.779335E-03                                    | 3.916284E-01          | 1.691603E-03                                    |
| 1.755       | 6.443248E-01          | 1.769266E-03                                    | 3.933153E-01          | 1.686844E-03                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 1.760       | 6.460841E-01          | 1.759247E-03                                    | 3.949974E-01          | 1.682077E-03                                    |
| 1.765       | 6.478334E-01          | 1.749278E-03                                    | 3.966747E-01          | 1.677304E-03                                    |
| 1.770       | 6.495727E-01          | 1.739359E-03                                    | 3.983472E-01          | 1.672524E-03                                    |
| 1.775       | 6.513022E-01          | 1.729490E-03                                    | 4.000149E-01          | 1.667739E-03                                    |
| 1.780       | 6.530219E-01          | 1.719672E-03                                    | 4.016779E-01          | 1.662949E-03                                    |
| 1.785       | 6.547318E-01          | 1.709904E-03                                    | 4.033360E-01          | 1.658154E-03                                    |
| 1.790       | 6.564320E-01          | 1.700186E-03                                    | 4.049894E-01          | 1.653355E-03                                    |
| 1.795       | 6.581225E-01          | 1.690518E-03                                    | 4.066379E-01          | 1.648552E-03                                    |
| 1.800       | 6.598034E-01          | 1.680900E-03                                    | 4.082817E-01          | 1.643746E-03                                    |
| 1.805       | 6.614747E-01          | 1.671333E-03                                    | 4.099206E-01          | 1.638936E-03                                    |
| 1.810       | 6.631365E-01          | 1.661816E-03                                    | 4.115547E-01          | 1.634124E-03                                    |
| 1.815       | 6.647889E-01          | 1.652349E-03                                    | 4.131841E-01          | 1.629309E-03                                    |
| 1.820       | 6.664318E-01          | 1.642932E-03                                    | 4.148085E-01          | 1.624493E-03                                    |
| 1.825       | 6.680654E-01          | 1.633565E-03                                    | 4.164282E-01          | 1.619675E-03                                    |
| 1.830       | 6.696896E-01          | 1.624249E-03                                    | 4.180431E-01          | 1.614855E-03                                    |
| 1.835       | 6.713046E-01          | 1.614982E-03                                    | 4.196531E-01          | 1.610035E-03                                    |
| 1.840       | 6.729104E-01          | 1.605765E-03                                    | 4.212583E-01          | 1.605215E-03                                    |
| 1.845       | 6.745070E-01          | 1.596598E-03                                    | 4.228587E-01          | 1.600394E-03                                    |
| 1.850       | 6.760945E-01          | 1.587481E-03                                    | 4.244543E-01          | 1.595574E-03                                    |
| 1.855       | 6.776729E-01          | 1.578414E-03                                    | 4.260450E-01          | 1.590754E-03                                    |
| 1.860       | 6.792423E-01          | 1.569396E-03                                    | 4.276310E-01          | 1.585934E-03                                    |
| 1.865       | 6.808027E-01          | 1.560428E-03                                    | 4.292121E-01          | 1.581116E-03                                    |
| 1.870       | 6.823542E-01          | 1.551510E-03                                    | 4.307884E-01          | 1.576300E-03                                    |
| 1.875       | 6.838969E-01          | 1.542640E-03                                    | 4.323599E-01          | 1.571485E-03                                    |
| 1.880       | 6.854307E-01          | 1.533820E-03                                    | 4.339266E-01          | 1.566673E-03                                    |
| 1.885       | 6.869557E-01          | 1.525050E-03                                    | 4.354884E-01          | 1.561862E-03                                    |
| 1.890       | 6.884720E-01          | 1.516328E-03                                    | 4.370455E-01          | 1.557055E-03                                    |
| 1.895       | 6.899797E-01          | 1.507655E-03                                    | 4.385977E-01          | 1.552250E-03                                    |
| 1.900       | 6.914787E-01          | 1.499031E-03                                    | 4.401452E-01          | 1.547448E-03                                    |
| 1.905       | 6.929692E-01          | 1.490455E-03                                    | 4.416878E-01          | 1.542650E-03                                    |
| 1.910       | 6.944511E-01          | 1.481928E-03                                    | 4.432257E-01          | 1.537856E-03                                    |
| 1.915       | 6.959246E-01          | 1.473450E-03                                    | 4.447587E-01          | 1.533065E-03                                    |
| 1.920       | 6.973896E-01          | 1.465020E-03                                    | 4.462870E-01          | 1.528279E-03                                    |
| 1.925       | 6.988462E-01          | 1.456638E-03                                    | 4.478105E-01          | 1.523497E-03                                    |
| 1.930       | 7.002945E-01          | 1.448304E-03                                    | 4.493292E-01          | 1.518720E-03                                    |
| 1.935       | 7.017345E-01          | 1.440017E-03                                    | 4.508432E-01          | 1.513948E-03                                    |
| 1.940       | 7.031663E-01          | 1.431773E-03                                    | 4.523524E-01          | 1.509181E-03                                    |
| 1.945       | 7.045899E-01          | 1.423588E-03                                    | 4.538568E-01          | 1.504420E-03                                    |
| 1.950       | 7.060054E-01          | 1.415444E-03                                    | 4.553565E-01          | 1.499664E-03                                    |
| 1.955       | 7.074127E-01          | 1.407347E-03                                    | 4.568514E-01          | 1.494914E-03                                    |
| 1.960       | 7.088120E-01          | 1.399298E-03                                    | 4.583415E-01          | 1.490170E-03                                    |
| 1.965       | 7.102033E-01          | 1.391295E-03                                    | 4.598270E-01          | 1.485432E-03                                    |
| 1.970       | 7.115866E-01          | 1.383340E-03                                    | 4.613077E-01          | 1.480701E-03                                    |
| 1.975       | 7.129621E-01          | 1.375430E-03                                    | 4.627836E-01          | 1.475976E-03                                    |
| 1.980       | 7.143296E-01          | 1.367567E-03                                    | 4.642549E-01          | 1.471258E-03                                    |
| 1.985       | 7.156894E-01          | 1.359750E-03                                    | 4.657215E-01          | 1.466548E-03                                    |
| 1.990       | 7.170414E-01          | 1.351979E-03                                    | 4.671833E-01          | 1.461844E-03                                    |
| 1.995       | 7.183856E-01          | 1.344254E-03                                    | 4.686404E-01          | 1.457148E-03                                    |
| 2.000       | 7.197222E-01          | 1.336575E-03                                    | 4.700929E-01          | 1.452459E-03                                    |
| 2.010       | 7.223725E-01          | 2.650294E-03                                    | 4.729838E-01          | 2.890884E-03                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 2.020       | 7.249926E-01          | 2.620119E-03                                    | 4.758560E-01          | 2.872224E-03                                    |
| 2.030       | 7.275829E-01          | 2.590303E-03                                    | 4.787096E-01          | 2.853631E-03                                    |
| 2.040       | 7.301438E-01          | 2.560341E-03                                    | 4.815448E-01          | 2.835107E-03                                    |
| 2.050       | 7.326755E-01          | 2.531732E-03                                    | 4.843614E-01          | 2.816653E-03                                    |
| 2.060       | 7.351785E-01          | 2.502972E-03                                    | 4.871597E-01          | 2.798273E-03                                    |
| 2.070       | 7.376530E-01          | 2.474557E-03                                    | 4.899396E-01          | 2.779968E-03                                    |
| 2.080       | 7.400995E-01          | 2.446485E-03                                    | 4.927014E-01          | 2.761741E-03                                    |
| 2.090       | 7.425183E-01          | 2.418751E-03                                    | 4.954450E-01          | 2.743593E-03                                    |
| 2.100       | 7.449096E-01          | 2.391354E-03                                    | 4.981705E-01          | 2.725525E-03                                    |
| 2.110       | 7.472739E-01          | 2.364289E-03                                    | 5.008780E-01          | 2.707541E-03                                    |
| 2.120       | 7.496114E-01          | 2.337552E-03                                    | 5.035677E-01          | 2.689640E-03                                    |
| 2.130       | 7.519226E-01          | 2.311142E-03                                    | 5.062395E-01          | 2.671825E-03                                    |
| 2.140       | 7.542076E-01          | 2.285054E-03                                    | 5.088936E-01          | 2.654097E-03                                    |
| 2.150       | 7.564669E-01          | 2.259285E-03                                    | 5.115301E-01          | 2.636457E-03                                    |
| 2.160       | 7.587008E-01          | 2.233832E-03                                    | 5.141490E-01          | 2.618907E-03                                    |
| 2.170       | 7.609094E-01          | 2.208690E-03                                    | 5.167504E-01          | 2.601448E-03                                    |
| 2.180       | 7.630933E-01          | 2.183858E-03                                    | 5.193345E-01          | 2.584081E-03                                    |
| 2.190       | 7.652526E-01          | 2.159331E-03                                    | 5.219013E-01          | 2.566806E-03                                    |
| 2.200       | 7.673877E-01          | 2.135106E-03                                    | 5.244509E-01          | 2.549626E-03                                    |
| 2.210       | 7.694989E-01          | 2.111180E-03                                    | 5.269835E-01          | 2.532540E-03                                    |
| 2.220       | 7.715865E-01          | 2.087549E-03                                    | 5.294990E-01          | 2.515550E-03                                    |
| 2.230       | 7.736507E-01          | 2.064210E-03                                    | 5.319977E-01          | 2.498655E-03                                    |
| 2.240       | 7.756918E-01          | 2.041159E-03                                    | 5.344795E-01          | 2.481858E-03                                    |
| 2.250       | 7.777102E-01          | 2.018394E-03                                    | 5.369447E-01          | 2.465159E-03                                    |
| 2.260       | 7.797062E-01          | 1.995911E-03                                    | 5.393933E-01          | 2.448557E-03                                    |
| 2.270       | 7.816799E-01          | 1.973707E-03                                    | 5.418253E-01          | 2.432055E-03                                    |
| 2.280       | 7.836316E-01          | 1.951777E-03                                    | 5.442410E-01          | 2.415651E-03                                    |
| 2.290       | 7.855618E-01          | 1.930120E-03                                    | 5.466403E-01          | 2.399347E-03                                    |
| 2.300       | 7.874705E-01          | 1.908732E-03                                    | 5.490234E-01          | 2.383144E-03                                    |
| 2.310       | 7.893581E-01          | 1.887609E-03                                    | 5.513905E-01          | 2.367040E-03                                    |
| 2.320       | 7.912248E-01          | 1.866749E-03                                    | 5.537415E-01          | 2.351037E-03                                    |
| 2.330       | 7.930710E-01          | 1.846148E-03                                    | 5.560767E-01          | 2.335135E-03                                    |
| 2.340       | 7.948968E-01          | 1.825803E-03                                    | 5.583960E-01          | 2.319335E-03                                    |
| 2.350       | 7.967025E-01          | 1.805711E-03                                    | 5.606996E-01          | 2.303635E-03                                    |
| 2.360       | 7.984884E-01          | 1.785869E-03                                    | 5.629877E-01          | 2.288037E-03                                    |
| 2.370       | 8.002546E-01          | 1.766273E-03                                    | 5.652602E-01          | 2.272540E-03                                    |
| 2.380       | 8.020016E-01          | 1.746921E-03                                    | 5.675174E-01          | 2.257145E-03                                    |
| 2.390       | 8.037294E-01          | 1.727810E-03                                    | 5.697592E-01          | 2.241852E-03                                    |
| 2.400       | 8.054383E-01          | 1.708936E-03                                    | 5.719859E-01          | 2.226660E-03                                    |
| 2.410       | 8.071286E-01          | 1.690296E-03                                    | 5.741974E-01          | 2.211570E-03                                    |
| 2.420       | 8.088005E-01          | 1.671889E-03                                    | 5.763940E-01          | 2.196581E-03                                    |
| 2.430       | 8.104542E-01          | 1.653710E-03                                    | 5.785757E-01          | 2.181694E-03                                    |
| 2.440       | 8.120900E-01          | 1.635757E-03                                    | 5.807426E-01          | 2.166908E-03                                    |
| 2.450       | 8.137080E-01          | 1.618027E-03                                    | 5.828948E-01          | 2.152223E-03                                    |
| 2.460       | 8.153085E-01          | 1.600517E-03                                    | 5.850325E-01          | 2.137639E-03                                    |
| 2.470       | 8.168917E-01          | 1.583224E-03                                    | 5.871556E-01          | 2.123156E-03                                    |
| 2.480       | 8.184579E-01          | 1.566145E-03                                    | 5.892644E-01          | 2.108774E-03                                    |
| 2.490       | 8.200071E-01          | 1.549279E-03                                    | 5.913589E-01          | 2.094492E-03                                    |
| 2.500       | 8.215398E-01          | 1.532621E-03                                    | 5.934392E-01          | 2.080310E-03                                    |
| 2.510       | 8.230559E-01          | 1.516170E-03                                    | 5.955054E-01          | 2.066228E-03                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 2.520       | 8.245559E-01          | 1.499922E-03                                    | 5.975577E-01          | 2.052246E-03                                    |
| 2.530       | 8.260397E-01          | 1.483875E-03                                    | 5.995961E-01          | 2.038363E-03                                    |
| 2.540       | 8.275078E-01          | 1.468027E-03                                    | 6.016206E-01          | 2.024579E-03                                    |
| 2.550       | 8.289601E-01          | 1.452374E-03                                    | 6.036315E-01          | 2.010893E-03                                    |
| 2.560       | 8.303970E-01          | 1.436915E-03                                    | 6.056288E-01          | 1.997306E-03                                    |
| 2.570       | 8.318187E-01          | 1.421646E-03                                    | 6.076126E-01          | 1.983817E-03                                    |
| 2.580       | 8.332253E-01          | 1.406565E-03                                    | 6.095831E-01          | 1.970425E-03                                    |
| 2.590       | 8.346169E-01          | 1.391670E-03                                    | 6.115402E-01          | 1.957131E-03                                    |
| 2.600       | 8.359939E-01          | 1.376959E-03                                    | 6.134841E-01          | 1.943933E-03                                    |
| 2.610       | 8.373563E-01          | 1.362428E-03                                    | 6.154150E-01          | 1.930831E-03                                    |
| 2.620       | 8.387044E-01          | 1.348076E-03                                    | 6.173326E-01          | 1.917825E-03                                    |
| 2.630       | 8.400383E-01          | 1.333900E-03                                    | 6.192377E-01          | 1.904915E-03                                    |
| 2.640       | 8.413582E-01          | 1.319898E-03                                    | 6.211298E-01          | 1.892099E-03                                    |
| 2.650       | 8.426643E-01          | 1.306068E-03                                    | 6.230092E-01          | 1.879379E-03                                    |
| 2.660       | 8.439567E-01          | 1.292407E-03                                    | 6.248759E-01          | 1.866752E-03                                    |
| 2.670       | 8.452356E-01          | 1.278912E-03                                    | 6.267302E-01          | 1.854218E-03                                    |
| 2.680       | 8.465012E-01          | 1.265583E-03                                    | 6.285719E-01          | 1.841778E-03                                    |
| 2.690       | 8.477536E-01          | 1.252416E-03                                    | 6.304014E-01          | 1.829431E-03                                    |
| 2.700       | 8.489930E-01          | 1.239410E-03                                    | 6.322185E-01          | 1.817175E-03                                    |
| 2.710       | 8.502196E-01          | 1.226562E-03                                    | 6.340236E-01          | 1.805011E-03                                    |
| 2.720       | 8.514334E-01          | 1.213871E-03                                    | 6.358165E-01          | 1.792938E-03                                    |
| 2.730       | 8.526348E-01          | 1.201334E-03                                    | 6.375974E-01          | 1.780956E-03                                    |
| 2.740       | 8.538237E-01          | 1.188949E-03                                    | 6.393665E-01          | 1.769063E-03                                    |
| 2.750       | 8.550004E-01          | 1.176714E-03                                    | 6.411238E-01          | 1.757260E-03                                    |
| 2.760       | 8.561651E-01          | 1.164627E-03                                    | 6.428693E-01          | 1.745546E-03                                    |
| 2.770       | 8.573177E-01          | 1.152686E-03                                    | 6.446032E-01          | 1.733921E-03                                    |
| 2.780       | 8.584586E-01          | 1.140890E-03                                    | 6.463256E-01          | 1.722383E-03                                    |
| 2.790       | 8.595879E-01          | 1.129236E-03                                    | 6.480366E-01          | 1.710933E-03                                    |
| 2.800       | 8.607056E-01          | 1.117722E-03                                    | 6.497361E-01          | 1.699569E-03                                    |
| 2.810       | 8.618119E-01          | 1.106348E-03                                    | 6.514244E-01          | 1.688292E-03                                    |
| 2.820       | 8.629070E-01          | 1.095109E-03                                    | 6.531015E-01          | 1.677100E-03                                    |
| 2.830       | 8.639910E-01          | 1.084006E-03                                    | 6.547675E-01          | 1.665993E-03                                    |
| 2.840       | 8.650641E-01          | 1.073036E-03                                    | 6.564225E-01          | 1.654971E-03                                    |
| 2.850       | 8.661263E-01          | 1.062197E-03                                    | 6.580665E-01          | 1.644033E-03                                    |
| 2.860       | 8.671778E-01          | 1.051488E-03                                    | 6.596997E-01          | 1.633179E-03                                    |
| 2.870       | 8.682187E-01          | 1.040907E-03                                    | 6.613221E-01          | 1.622407E-03                                    |
| 2.880       | 8.692491E-01          | 1.030452E-03                                    | 6.629338E-01          | 1.611717E-03                                    |
| 2.890       | 8.702693E-01          | 1.020122E-03                                    | 6.645349E-01          | 1.601109E-03                                    |
| 2.900       | 8.712792E-01          | 1.009915E-03                                    | 6.661255E-01          | 1.590583E-03                                    |
| 2.910       | 8.722790E-01          | 9.998284E-04                                    | 6.677056E-01          | 1.580137E-03                                    |
| 2.920       | 8.732689E-01          | 9.898619E-04                                    | 6.692754E-01          | 1.569771E-03                                    |
| 2.930       | 8.742489E-01          | 9.800135E-04                                    | 6.708349E-01          | 1.559484E-03                                    |
| 2.940       | 8.752192E-01          | 9.702816E-04                                    | 6.723842E-01          | 1.549277E-03                                    |
| 2.950       | 8.761798E-01          | 9.606647E-04                                    | 6.739233E-01          | 1.539148E-03                                    |
| 2.960       | 8.771310E-01          | 9.511613E-04                                    | 6.754524E-01          | 1.529096E-03                                    |
| 2.970       | 8.780728E-01          | 9.417698E-04                                    | 6.769715E-01          | 1.519122E-03                                    |
| 2.980       | 8.790052E-01          | 9.324888E-04                                    | 6.784808E-01          | 1.509224E-03                                    |
| 2.990       | 8.799286E-01          | 9.233168E-04                                    | 6.799802E-01          | 1.499403E-03                                    |
| 3.000       | 8.808428E-01          | 9.142525E-04                                    | 6.814698E-01          | 1.489656E-03                                    |
| 3.050       | 8.852818E-01          | 4.438964E-03                                    | 6.837745E-01          | 7.304695E-03                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 3.100       | 8.895095E-01          | 4.227702E-03                                    | 6.958466E-01          | 7.072049E-03                                    |
| 3.150       | 8.935379E-01          | 4.028386E-03                                    | 7.026948E-01          | 6.848218E-03                                    |
| 3.200       | 8.973781E-01          | 3.840256E-03                                    | 7.093276E-01          | 6.632865E-03                                    |
| 3.250       | 9.010407E-01          | 3.662604E-03                                    | 7.157533E-01          | 6.425658E-03                                    |
| 3.300       | 9.045355E-01          | 3.494770E-03                                    | 7.219796E-01          | 6.226277E-03                                    |
| 3.350       | 9.078716E-01          | 3.336137E-03                                    | 7.280140E-01          | 6.034409E-03                                    |
| 3.400       | 9.110578E-01          | 3.186132E-03                                    | 7.338637E-01          | 5.849751E-03                                    |
| 3.450       | 9.141020E-01          | 3.044220E-03                                    | 7.395358E-01          | 5.672010E-03                                    |
| 3.500       | 9.170119E-01          | 2.909902E-03                                    | 7.450367E-01          | 5.500905E-03                                    |
| 3.550       | 9.197946E-01          | 2.782714E-03                                    | 7.503728E-01          | 5.336163E-03                                    |
| 3.600       | 9.224568E-01          | 2.662220E-03                                    | 7.555503E-01          | 5.177523E-03                                    |
| 3.650       | 9.250048E-01          | 2.548017E-03                                    | 7.605751E-01          | 5.024732E-03                                    |
| 3.700       | 9.274446E-01          | 2.439727E-03                                    | 7.654526E-01          | 4.877548E-03                                    |
| 3.750       | 9.297816E-01          | 2.336996E-03                                    | 7.701884E-01          | 4.735740E-03                                    |
| 3.800       | 9.320211E-01          | 2.239497E-03                                    | 7.747874E-01          | 4.599086E-03                                    |
| 3.850       | 9.341680E-01          | 2.146921E-03                                    | 7.792548E-01          | 4.467371E-03                                    |
| 3.900       | 9.362270E-01          | 2.058981E-03                                    | 7.835952E-01          | 4.340392E-03                                    |
| 3.950       | 9.382024E-01          | 1.975408E-03                                    | 7.878132E-01          | 4.217953E-03                                    |
| 4.000       | 9.400983E-01          | 1.895950E-03                                    | 7.919130E-01          | 4.099867E-03                                    |
| 4.050       | 9.419187E-01          | 1.820373E-03                                    | 7.958990E-01          | 3.985956E-03                                    |
| 4.100       | 9.436671E-01          | 1.748457E-03                                    | 7.997750E-01          | 3.876048E-03                                    |
| 4.150       | 9.453471E-01          | 1.679995E-03                                    | 8.035450E-01          | 3.769979E-03                                    |
| 4.200       | 9.469619E-01          | 1.614795E-03                                    | 8.072126E-01          | 3.667592E-03                                    |
| 4.250       | 9.485146E-01          | 1.552675E-03                                    | 8.107813E-01          | 3.568739E-03                                    |
| 4.300       | 9.500081E-01          | 1.493466E-03                                    | 8.142546E-01          | 3.473276E-03                                    |
| 4.350       | 9.514451E-01          | 1.437009E-03                                    | 8.176357E-01          | 3.381067E-03                                    |
| 4.400       | 9.528282E-01          | 1.383154E-03                                    | 8.209277E-01          | 3.291981E-03                                    |
| 4.450       | 9.541600E-01          | 1.331762E-03                                    | 8.241336E-01          | 3.205892E-03                                    |
| 4.500       | 9.554427E-01          | 1.282701E-03                                    | 8.272562E-01          | 3.122682E-03                                    |
| 4.550       | 9.566785E-01          | 1.235848E-03                                    | 8.302985E-01          | 3.042237E-03                                    |
| 4.600       | 9.578696E-01          | 1.191085E-03                                    | 8.332629E-01          | 2.964448E-03                                    |
| 4.650       | 9.590179E-01          | 1.148305E-03                                    | 8.361521E-01          | 2.889210E-03                                    |
| 4.700       | 9.601253E-01          | 1.107404E-03                                    | 8.389686E-01          | 2.816423E-03                                    |
| 4.750       | 9.611936E-01          | 1.068285E-03                                    | 8.417146E-01          | 2.745993E-03                                    |
| 4.800       | 9.622245E-01          | 1.030857E-03                                    | 8.443924E-01          | 2.677829E-03                                    |
| 4.850       | 9.632195E-01          | 9.950354E-04                                    | 8.470042E-01          | 2.611842E-03                                    |
| 4.900       | 9.641803E-01          | 9.607382E-04                                    | 8.495522E-01          | 2.547951E-03                                    |
| 4.950       | 9.651081E-01          | 9.278896E-04                                    | 8.520383E-01          | 2.486075E-03                                    |
| 5.000       | 9.660046E-01          | 8.964178E-04                                    | 8.544644E-01          | 2.426137E-03                                    |
| 5.050       | 9.668708E-01          | 8.662548E-04                                    | 8.568325E-01          | 2.368066E-03                                    |
| 5.100       | 9.677082E-01          | 8.373367E-04                                    | 8.591442E-01          | 2.311790E-03                                    |
| 5.150       | 9.685178E-01          | 8.096032E-04                                    | 8.614015E-01          | 2.257244E-03                                    |
| 5.200       | 9.693008E-01          | 7.829971E-04                                    | 8.636059E-01          | 2.204363E-03                                    |
| 5.250       | 9.700582E-01          | 7.574644E-04                                    | 8.657589E-01          | 2.153086E-03                                    |
| 5.300       | 9.707912E-01          | 7.329542E-04                                    | 8.678623E-01          | 2.103354E-03                                    |
| 5.350       | 9.715006E-01          | 7.094184E-04                                    | 8.699174E-01          | 2.055111E-03                                    |
| 5.400       | 9.721874E-01          | 6.868111E-04                                    | 8.719257E-01          | 2.008303E-03                                    |
| 5.450       | 9.728525E-01          | 6.650894E-04                                    | 8.738886E-01          | 1.962879E-03                                    |
| 5.500       | 9.734967E-01          | 6.442123E-04                                    | 8.758074E-01          | 1.918788E-03                                    |
| 5.550       | 9.741208E-01          | 6.241410E-04                                    | 8.776834E-01          | 1.875983E-03                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 5.600       | 9.747257E-01          | 6.048389E-04                                    | 8.795178E-01          | 1.834420E-03                                    |
| 5.650       | 9.753120E-01          | 5.862712E-04                                    | 8.813118E-01          | 1.794054E-03                                    |
| 5.700       | 9.758804E-01          | 5.684049E-04                                    | 8.830667E-01          | 1.754343E-03                                    |
| 5.750       | 9.764316E-01          | 5.512089E-04                                    | 8.847834E-01          | 1.716747E-03                                    |
| 5.800       | 9.769662E-01          | 5.346533E-04                                    | 8.864631E-01          | 1.679728E-03                                    |
| 5.850       | 9.774849E-01          | 5.187100E-04                                    | 8.881069E-01          | 1.643749E-03                                    |
| 5.900       | 9.779883E-01          | 5.033522E-04                                    | 8.897157E-01          | 1.608774E-03                                    |
| 5.950       | 9.784768E-01          | 4.885546E-04                                    | 8.912904E-01          | 1.574769E-03                                    |
| 6.000       | 9.789511E-01          | 4.742930E-04                                    | 8.928321E-01          | 1.541701E-03                                    |
| 6.050       | 9.794117E-01          | 4.605445E-04                                    | 8.943417E-01          | 1.509538E-03                                    |
| 6.100       | 9.798590E-01          | 4.472872E-04                                    | 8.958199E-01          | 1.478252E-03                                    |
| 6.150       | 9.802935E-01          | 4.345003E-04                                    | 8.972677E-01          | 1.447811E-03                                    |
| 6.200       | 9.807156E-01          | 4.221642E-04                                    | 8.986859E-01          | 1.418190E-03                                    |
| 6.250       | 9.811259E-01          | 4.102601E-04                                    | 9.000753E-01          | 1.389359E-03                                    |
| 6.300       | 9.815247E-01          | 3.987699E-04                                    | 9.014366E-01          | 1.361295E-03                                    |
| 6.350       | 9.819123E-01          | 3.876768E-04                                    | 9.027706E-01          | 1.333972E-03                                    |
| 6.400       | 9.822893E-01          | 3.769644E-04                                    | 9.040779E-01          | 1.307365E-03                                    |
| 6.450       | 9.826559E-01          | 3.666173E-04                                    | 9.053594E-01          | 1.281453E-03                                    |
| 6.500       | 9.830125E-01          | 3.566207E-04                                    | 9.066156E-01          | 1.256212E-03                                    |
| 6.550       | 9.833595E-01          | 3.469607E-04                                    | 9.078472E-01          | 1.231622E-03                                    |
| 6.600       | 9.836971E-01          | 3.376236E-04                                    | 9.090549E-01          | 1.207662E-03                                    |
| 6.650       | 9.840257E-01          | 3.285969E-04                                    | 9.102392E-01          | 1.184312E-03                                    |
| 6.700       | 9.843456E-01          | 3.198682E-04                                    | 9.114007E-01          | 1.161554E-03                                    |
| 6.750       | 9.846570E-01          | 3.114258E-04                                    | 9.125401E-01          | 1.139368E-03                                    |
| 6.800       | 9.849603E-01          | 3.032587E-04                                    | 9.136578E-01          | 1.117738E-03                                    |
| 6.850       | 9.852556E-01          | 2.953563E-04                                    | 9.147545E-01          | 1.096645E-03                                    |
| 6.900       | 9.855433E-01          | 2.877082E-04                                    | 9.158306E-01          | 1.076075E-03                                    |
| 6.950       | 9.858236E-01          | 2.803049E-04                                    | 9.168866E-01          | 1.056010E-03                                    |
| 7.000       | 9.860968E-01          | 2.731371E-04                                    | 9.179230E-01          | 1.036436E-03                                    |
| 7.050       | 9.863630E-01          | 2.661958E-04                                    | 9.189403E-01          | 1.017338E-03                                    |
| 7.100       | 9.866225E-01          | 2.594725E-04                                    | 9.199391E-01          | 9.987014E-04                                    |
| 7.150       | 9.868754E-01          | 2.529592E-04                                    | 9.209196E-01          | 9.805129E-04                                    |
| 7.200       | 9.871221E-01          | 2.466481E-04                                    | 9.218823E-01          | 9.627592E-04                                    |
| 7.250       | 9.873626E-01          | 2.405317E-04                                    | 9.228277E-01          | 9.454276E-04                                    |
| 7.300       | 9.875972E-01          | 2.346029E-04                                    | 9.237563E-01          | 9.285055E-04                                    |
| 7.350       | 9.878260E-01          | 2.288548E-04                                    | 9.246582E-01          | 9.119813E-04                                    |
| 7.400       | 9.880493E-01          | 2.232910E-04                                    | 9.255441E-01          | 8.958433E-04                                    |
| 7.450       | 9.882672E-01          | 2.178751E-04                                    | 9.264142E-01          | 8.800805E-04                                    |
| 7.500       | 9.884798E-01          | 2.126311E-04                                    | 9.273088E-01          | 8.646821E-04                                    |
| 7.550       | 9.886874E-01          | 2.075433E-04                                    | 9.281585E-01          | 8.496378E-04                                    |
| 7.600       | 9.888900E-01          | 2.026062E-04                                    | 9.289934E-01          | 8.349375E-04                                    |
| 7.650       | 9.890878E-01          | 1.978144E-04                                    | 9.298140E-01          | 8.205716E-04                                    |
| 7.700       | 9.892810E-01          | 1.931629E-04                                    | 9.306205E-01          | 8.065707E-04                                    |
| 7.750       | 9.894696E-01          | 1.886468E-04                                    | 9.314133E-01          | 7.928058E-04                                    |
| 7.800       | 9.896539E-01          | 1.842614E-04                                    | 9.321927E-01          | 7.793891E-04                                    |
| 7.850       | 9.898339E-01          | 1.800023E-04                                    | 9.329590E-01          | 7.662690E-04                                    |
| 7.900       | 9.900097E-01          | 1.758650E-04                                    | 9.337124E-01          | 7.534405E-04                                    |
| 7.950       | 9.901816E-01          | 1.718455E-04                                    | 9.344533E-01          | 7.408946E-04                                    |
| 8.000       | 9.903495E-01          | 1.679397E-04                                    | 9.351819E-01          | 7.286237E-04                                    |
| 8.050       | 9.905137E-01          | 1.641439E-04                                    | 9.358986E-01          | 7.166202E-04                                    |
| 8.100       | 9.906741E-01          | 1.604544E-04                                    | 9.366034E-01          | 7.048771E-04                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 8.150       | 9.909310E-01          | 1.568676E-04                                    | 9.372968E-01          | 6.933873E-04                                    |
| 8.200       | 9.909844E-01          | 1.533801E-04                                    | 9.79790E-01           | 6.821441E-04                                    |
| 8.250       | 9.911344E-01          | 1.499837E-04                                    | 9.386501E-01          | 6.711410E-04                                    |
| 8.300       | 9.912810E-01          | 1.466902E-04                                    | 9.393105E-01          | 6.603717E-04                                    |
| 8.350       | 9.914245E-01          | 1.434815E-04                                    | 9.399603E-01          | 6.498300E-04                                    |
| 8.400       | 9.915649E-01          | 1.403599E-04                                    | 9.405998E-01          | 6.395100E-04                                    |
| 8.450       | 9.917022E-01          | 1.373224E-04                                    | 9.412292E-01          | 6.294059E-04                                    |
| 8.500       | 9.918366E-01          | 1.343663E-04                                    | 9.418487E-01          | 6.195122E-04                                    |
| 8.550       | 9.919681E-01          | 1.314892E-04                                    | 9.424586E-01          | 6.098235E-04                                    |
| 8.600       | 9.920968E-01          | 1.286884E-04                                    | 9.430589E-01          | 6.003345E-04                                    |
| 8.650       | 9.922227E-01          | 1.259615E-04                                    | 9.436499E-01          | 5.910401E-04                                    |
| 8.700       | 9.923460E-01          | 1.233063E-04                                    | 9.442319E-01          | 5.819354E-04                                    |
| 8.750       | 9.924667E-01          | 1.207205E-04                                    | 9.448049E-01          | 5.730156E-04                                    |
| 8.800       | 9.925849E-01          | 1.182119E-04                                    | 9.453692E-01          | 5.642762E-04                                    |
| 8.850       | 9.927007E-01          | 1.157435E-04                                    | 9.459249E-01          | 5.557124E-04                                    |
| 8.900       | 9.928141E-01          | 1.133582E-04                                    | 9.464722E-01          | 5.473202E-04                                    |
| 8.950       | 9.929251E-01          | 1.110291E-04                                    | 9.470113E-01          | 5.390950E-04                                    |
| 9.000       | 9.930338E-01          | 1.087594E-04                                    | 9.475423E-01          | 5.310330E-04                                    |
| 9.050       | 9.931404E-01          | 1.065472E-04                                    | 9.480655E-01          | 5.231299E-04                                    |
| 9.100       | 9.932448E-01          | 1.043909E-04                                    | 9.485808E-01          | 5.153821E-04                                    |
| 9.150       | 9.933471E-01          | 1.022886E-04                                    | 9.490886E-01          | 5.077857E-04                                    |
| 9.200       | 9.934473E-01          | 1.002389E-04                                    | 9.495890E-01          | 5.003371E-04                                    |
| 9.250       | 9.935455E-01          | 9.824012E-05                                    | 9.500820E-01          | 4.930326E-04                                    |
| 9.300       | 9.936418E-01          | 9.629079E-05                                    | 9.505679E-01          | 4.858689E-04                                    |
| 9.350       | 9.937362E-01          | 9.438945E-05                                    | 9.510467E-01          | 4.788426E-04                                    |
| 9.400       | 9.938288E-01          | 9.253470E-05                                    | 9.515187E-01          | 4.719504E-04                                    |
| 9.450       | 9.939195E-01          | 9.072516E-05                                    | 9.519838E-01          | 4.651892E-04                                    |
| 9.500       | 9.940084E-01          | 8.895954E-05                                    | 9.524424E-01          | 4.585559E-04                                    |
| 9.550       | 9.940957E-01          | 8.723655E-05                                    | 9.528944E-01          | 4.520475E-04                                    |
| 9.600       | 9.941812E-01          | 8.555498E-05                                    | 9.533401E-01          | 4.456611E-04                                    |
| 9.650       | 9.942652E-01          | 8.391363E-05                                    | 9.537795E-01          | 4.393938E-04                                    |
| 9.700       | 9.943475E-01          | 8.231137E-05                                    | 9.542127E-01          | 4.332430E-04                                    |
| 9.750       | 9.944282E-01          | 8.074708E-05                                    | 9.546399E-01          | 4.272058E-04                                    |
| 9.800       | 9.945074E-01          | 7.921968E-05                                    | 9.550612E-01          | 4.212798E-04                                    |
| 9.850       | 9.945852E-01          | 7.772816E-05                                    | 9.554767E-01          | 4.154624E-04                                    |
| 9.900       | 9.946614E-01          | 7.627149E-05                                    | 9.558864E-01          | 4.097512E-04                                    |
| 9.950       | 9.947363E-01          | 7.484871E-05                                    | 9.562906E-01          | 4.041436E-04                                    |
| 10.000      | 9.948097E-01          | 7.345888E-05                                    | 9.566892E-01          | 3.986375E-04                                    |
| 11.000      | 9.960306E-01          | 1.220895E-03                                    | 9.636436E-01          | 6.954374E-03                                    |
| 12.000      | 9.968972E-01          | 8.665487E-04                                    | 9.690522E-01          | 5.408580E-03                                    |
| 13.000      | 9.975290E-01          | 6.318445E-04                                    | 9.733403E-01          | 4.288117E-03                                    |
| 14.000      | 9.980005E-01          | 4.714442E-04                                    | 9.767968E-01          | 3.456468E-03                                    |
| 15.000      | 9.983593E-01          | 3.588336E-04                                    | 9.796232E-01          | 2.826401E-03                                    |
| 16.000      | 9.986372E-01          | 2.779195E-04                                    | 9.819636E-01          | 2.340441E-03                                    |
| 17.000      | 9.988558E-01          | 2.185688E-04                                    | 9.839233E-01          | 1.959682E-03                                    |
| 18.000      | 9.990300E-01          | 1.742435E-04                                    | 9.855804E-01          | 1.657157E-03                                    |
| 19.000      | 9.991706E-01          | 1.406029E-04                                    | 9.869942E-01          | 1.413781E-03                                    |
| 20.000      | 9.992853E-01          | 1.147008E-04                                    | 9.882100E-01          | 1.215787E-03                                    |
| 21.000      | 9.993798E-01          | 9.449564E-05                                    | 9.892631E-01          | 1.053079E-03                                    |
| 22.000      | 9.994584E-01          | 7.855060E-05                                    | 9.901812E-01          | 9.181390E-04                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 23.000      | 9.995242E-01          | 6.582998E-05                                    | 9.909865E-01          | 8.052908E-04                                    |
| 24.000      | 9.995798E-01          | 5.558277E-05                                    | 9.916967E-01          | 7.101946E-04                                    |
| 25.000      | 9.996270E-01          | 4.725375E-05                                    | 9.923262E-01          | 6.294943E-04                                    |
| 26.000      | 9.996675E-01          | 4.042778E-05                                    | 9.928868E-01          | 5.605668E-04                                    |
| 27.000      | 9.997023E-01          | 3.479087E-05                                    | 9.933881E-01          | 5.013422E-04                                    |
| 28.000      | 9.997324E-01          | 3.010292E-05                                    | 9.938383E-01          | 4.501722E-04                                    |
| 29.000      | 9.997585E-01          | 2.617854E-05                                    | 9.942440E-01          | 4.057331E-04                                    |
| 30.000      | 9.997814E-01          | 2.287326E-05                                    | 9.946110E-01          | 3.669540E-04                                    |
| 31.000      | 9.998015E-01          | 2.007350E-05                                    | 9.949439E-01          | 3.329621E-04                                    |
| 32.000      | 9.998192E-01          | 1.768925E-05                                    | 9.952470E-01          | 3.030410E-04                                    |
| 33.000      | 9.998348E-01          | 1.564869E-05                                    | 9.955236E-01          | 2.765994E-04                                    |
| 34.000      | 9.998487E-01          | 1.389403E-05                                    | 9.957767E-01          | 2.531458E-04                                    |
| 35.000      | 9.998611E-01          | 1.237853E-05                                    | 9.960090E-01          | 2.322701E-04                                    |
| 36.000      | 9.998722E-01          | 1.106413E-05                                    | 9.962226E-01          | 2.136275E-04                                    |
| 37.000      | 9.998821E-01          | 9.919637E-06                                    | 9.964145E-01          | 1.969274E-04                                    |
| 38.000      | 9.998910E-01          | 8.919365E-06                                    | 9.966015E-01          | 1.819233E-04                                    |
| 39.000      | 9.998990E-01          | 8.042046E-06                                    | 9.967699E-01          | 1.684052E-04                                    |
| 40.000      | 9.999063E-01          | 7.269985E-06                                    | 9.969261E-01          | 1.561937E-04                                    |
| 41.000      | 9.999129E-01          | 6.588384E-06                                    | 9.970712E-01          | 1.451347E-04                                    |
| 42.000      | 9.999189E-01          | 5.984819E-06                                    | 9.972063E-01          | 1.350954E-04                                    |
| 43.000      | 9.999243E-01          | 5.448810E-06                                    | 9.973323E-01          | 1.259610E-04                                    |
| 44.000      | 9.999293E-01          | 4.971484E-06                                    | 9.974499E-01          | 1.176317E-04                                    |
| 45.000      | 9.999339E-01          | 4.545298E-06                                    | 9.975599E-01          | 1.100208E-04                                    |
| 46.000      | 9.999380E-01          | 4.163816E-06                                    | 9.976630E-01          | 1.030524E-04                                    |
| 47.000      | 9.999418E-01          | 3.821527E-06                                    | 9.977596E-01          | 9.666030E-05                                    |
| 48.000      | 9.999454E-01          | 3.513637E-06                                    | 9.978504E-01          | 9.078601E-05                                    |
| 49.000      | 9.999486E-01          | 3.236246E-06                                    | 9.979358E-01          | 8.537818E-05                                    |
| 50.000      | 9.999516E-01          | 2.985647E-06                                    | 9.980162E-01          | 8.039142E-05                                    |
| 51.000      | 9.999543E-01          | 2.758841E-06                                    | 9.980920E-01          | 7.578553E-05                                    |
| 52.000      | 9.999569E-01          | 2.553167E-06                                    | 9.981635E-01          | 7.152484E-05                                    |
| 53.000      | 9.999593E-01          | 2.366307E-06                                    | 9.982311E-01          | 6.757762E-05                                    |
| 54.000      | 9.999614E-01          | 2.196233E-06                                    | 9.982950E-01          | 6.391555E-05                                    |
| 55.000      | 9.999635E-01          | 2.041167E-06                                    | 9.983555E-01          | 6.051334E-05                                    |
| 56.000      | 9.999654E-01          | 1.899548E-06                                    | 9.984129E-01          | 5.734836E-05                                    |
| 57.000      | 9.999672E-01          | 1.770000E-06                                    | 9.984673E-01          | 5.440029E-05                                    |
| 58.000      | 9.999688E-01          | 1.651310E-06                                    | 9.985189E-01          | 5.165084E-05                                    |
| 59.000      | 9.999704E-01          | 1.542403E-06                                    | 9.985680E-01          | 4.908359E-05                                    |
| 60.000      | 9.999718E-01          | 1.442329E-06                                    | 9.986147E-01          | 4.668368E-05                                    |
| 61.000      | 9.999732E-01          | 1.350240E-06                                    | 9.986591E-01          | 4.443770E-05                                    |
| 62.000      | 9.999744E-01          | 1.265385E-06                                    | 9.987014E-01          | 4.233351E-05                                    |
| 63.000      | 9.999756E-01          | 1.187092E-06                                    | 9.987418E-01          | 4.036008E-05                                    |
| 64.000      | 9.999767E-01          | 1.114761E-06                                    | 9.987803E-01          | 3.850742E-05                                    |
| 65.000      | 9.999778E-01          | 1.047857E-06                                    | 9.988171E-01          | 3.676644E-05                                    |
| 66.000      | 9.999787E-01          | 9.858969E-07                                    | 9.988522E-01          | 3.512883E-05                                    |
| 67.000      | 9.999797E-01          | 9.284495E-07                                    | 9.988858E-01          | 3.358705E-05                                    |
| 68.000      | 9.999805E-01          | 8.751261E-07                                    | 9.989179E-01          | 3.213418E-05                                    |
| 69.000      | 9.999814E-01          | 8.255763E-07                                    | 9.989487E-01          | 3.076391E-05                                    |
| 70.000      | 9.999822E-01          | 7.794842E-07                                    | 9.989782E-01          | 2.947045E-05                                    |
| 71.000      | 9.999829E-01          | 7.365643E-07                                    | 9.990064E-01          | 2.824849E-05                                    |
| 72.000      | 9.999836E-01          | 6.965581E-07                                    | 9.990335E-01          | 2.709316E-05                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 73.000      | 9.999843E-01          | 6.592316E-07                                    | 9.990595E-01          | 2.599998E-05                                    |
| 74.000      | 9.999849E-01          | 6.243721E-07                                    | 9.990845E-01          | 2.496483E-05                                    |
| 75.000      | 9.999855E-01          | 5.917866E-07                                    | 9.991084E-01          | 2.398390E-05                                    |
| 76.000      | 9.999860E-01          | 5.612993E-07                                    | 9.991315E-01          | 2.305370E-05                                    |
| 77.000      | 9.999866E-01          | 5.327502E-07                                    | 9.991537E-01          | 2.217098E-05                                    |
| 78.000      | 9.999871E-01          | 5.059934E-07                                    | 9.991750E-01          | 2.133276E-05                                    |
| 79.000      | 9.999875E-01          | 4.808954E-07                                    | 9.991956E-01          | 2.053626E-05                                    |
| 80.000      | 9.999880E-01          | 4.573344E-07                                    | 9.992153E-01          | 1.977892E-05                                    |
| 81.000      | 9.999884E-01          | 4.351988E-07                                    | 9.992344E-01          | 1.905837E-05                                    |
| 82.000      | 9.999889E-01          | 4.143864E-07                                    | 9.992527E-01          | 1.837240E-05                                    |
| 83.000      | 9.999892E-01          | 3.948033E-07                                    | 9.992705E-01          | 1.771895E-05                                    |
| 84.000      | 9.999896E-01          | 3.763635E-07                                    | 9.992876E-01          | 1.709613E-05                                    |
| 85.000      | 9.999900E-01          | 3.589878E-07                                    | 9.993041E-01          | 1.650215E-05                                    |
| 86.000      | 9.999903E-01          | 3.426034E-07                                    | 9.993200E-01          | 1.593538E-05                                    |
| 87.000      | 9.999907E-01          | 3.271431E-07                                    | 9.993354E-01          | 1.539427E-05                                    |
| 88.000      | 9.999910E-01          | 3.125451E-07                                    | 9.993503E-01          | 1.487737E-05                                    |
| 89.000      | 9.999913E-01          | 2.987523E-07                                    | 9.993647E-01          | 1.438337E-05                                    |
| 90.000      | 9.999915E-01          | 2.857121E-07                                    | 9.993786E-01          | 1.391099E-05                                    |
| 91.000      | 9.999918E-01          | 2.733756E-07                                    | 9.993920E-01          | 1.345907E-05                                    |
| 92.000      | 9.999921E-01          | 2.616979E-07                                    | 9.994051E-01          | 1.302652E-05                                    |
| 93.000      | 9.999923E-01          | 2.506370E-07                                    | 9.994177E-01          | 1.261231E-05                                    |
| 94.000      | 9.999926E-01          | 2.401545E-07                                    | 9.994299E-01          | 1.221547E-05                                    |
| 95.000      | 9.999928E-01          | 2.302142E-07                                    | 9.994417E-01          | 1.183511E-05                                    |
| 96.000      | 9.999930E-01          | 2.207829E-07                                    | 9.994532E-01          | 1.147037E-05                                    |
| 97.000      | 9.999932E-01          | 2.118297E-07                                    | 9.994643E-01          | 1.112047E-05                                    |
| 98.000      | 9.999934E-01          | 2.033258E-07                                    | 9.994751E-01          | 1.078466E-05                                    |
| 99.000      | 9.999936E-01          | 1.952444E-07                                    | 9.994856E-01          | 1.046223E-05                                    |
| 100.000     | 9.999938E-01          | 1.875605E-07                                    | 9.994957E-01          | 1.015253E-05                                    |
| 101.000     | 9.999940E-01          | 1.802509E-07                                    | 9.995056E-01          | 9.854930E-06                                    |
| 102.000     | 9.999942E-01          | 1.732939E-07                                    | 9.995151E-01          | 9.568850E-06                                    |
| 103.000     | 9.999943E-01          | 1.666694E-07                                    | 9.995244E-01          | 9.293737E-06                                    |
| 104.000     | 9.999945E-01          | 1.603584E-07                                    | 9.995335E-01          | 9.029069E-06                                    |
| 105.000     | 9.999947E-01          | 1.543433E-07                                    | 9.995422E-01          | 8.774356E-06                                    |
| 106.000     | 9.999948E-01          | 1.486076E-07                                    | 9.995508E-01          | 8.529134E-06                                    |
| 107.000     | 9.999949E-01          | 1.431359E-07                                    | 9.995591E-01          | 8.292965E-06                                    |
| 108.000     | 9.999951E-01          | 1.379137E-07                                    | 9.995671E-01          | 8.065436E-06                                    |
| 109.000     | 9.999952E-01          | 1.329275E-07                                    | 9.995750E-01          | 7.846154E-06                                    |
| 110.000     | 9.999954E-01          | 1.281647E-07                                    | 9.995826E-01          | 7.634749E-06                                    |
| 111.000     | 9.999955E-01          | 1.236132E-07                                    | 9.995900E-01          | 7.430872E-06                                    |
| 112.000     | 9.999956E-01          | 1.192620E-07                                    | 9.995973E-01          | 7.234189E-06                                    |
| 113.000     | 9.999957E-01          | 1.151006E-07                                    | 9.996043E-01          | 7.044386E-06                                    |
| 114.000     | 9.999958E-01          | 1.111191E-07                                    | 9.996112E-01          | 6.861166E-06                                    |
| 115.000     | 9.999959E-01          | 1.073083E-07                                    | 9.996179E-01          | 6.684244E-06                                    |
| 116.000     | 9.999960E-01          | 1.036595E-07                                    | 9.996244E-01          | 6.513354E-06                                    |
| 117.000     | 9.999961E-01          | 1.001644E-07                                    | 9.996307E-01          | 6.348239E-06                                    |
| 118.000     | 9.999962E-01          | 9.681546E-08                                    | 9.996369E-01          | 6.188658E-06                                    |
| 119.000     | 9.999963E-01          | 9.360528E-08                                    | 9.996429E-01          | 6.034381E-06                                    |
| 120.000     | 9.999964E-01          | 9.052705E-08                                    | 9.996488E-01          | 5.885190E-06                                    |
| 121.000     | 9.999965E-01          | 8.757432E-08                                    | 9.996546E-01          | 5.740877E-06                                    |
| 122.000     | 9.999966E-01          | 8.474100E-08                                    | 9.996602E-01          | 5.601243E-06                                    |

R.K.H. Gebel, Cumulative Blackbody Functions

| $\lambda_n$ | $\eta_R^+(\lambda_n)$ | $\eta_R^+(\lambda_n) - \eta_R^+(\lambda_{n-1})$ | $\eta_Q^+(\lambda_n)$ | $\eta_Q^+(\lambda_n) - \eta_Q^+(\lambda_{n-1})$ |
|-------------|-----------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|
| 123.000     | 9.999967E-01          | 8.202134E-08                                    | 9.996656E-01          | 5.466102E-06                                    |
| 124.000     | 9.999967E-01          | 7.940992E-08                                    | 9.996710E-01          | 5.335272E-06                                    |
| 125.000     | 9.999968E-01          | 7.690160E-08                                    | 9.996762E-01          | 5.208585E-06                                    |
| 126.000     | 9.999969E-01          | 7.449155E-08                                    | 9.996813E-01          | 5.085878E-06                                    |
| 127.000     | 9.999970E-01          | 7.217517E-08                                    | 9.996862E-01          | 4.966994E-06                                    |
| 128.000     | 9.999970E-01          | 6.994813E-08                                    | 9.996911E-01          | 4.851787E-06                                    |
| 129.000     | 9.999971E-01          | 6.780633E-08                                    | 9.996958E-01          | 4.740116E-06                                    |
| 130.000     | 9.999972E-01          | 6.574583E-08                                    | 9.997005E-01          | 4.631845E-06                                    |
| 131.000     | 9.999972E-01          | 6.376310E-08                                    | 9.997050E-01          | 4.526847E-06                                    |
| 132.000     | 9.999973E-01          | 6.185451E-08                                    | 9.997094E-01          | 4.424999E-06                                    |
| 133.000     | 9.999974E-01          | 6.001680E-08                                    | 9.997137E-01          | 4.326182E-06                                    |
| 134.000     | 9.999974E-01          | 5.824683E-08                                    | 9.997180E-01          | 4.230287E-06                                    |
| 135.000     | 9.999975E-01          | 5.654163E-08                                    | 9.997221E-01          | 4.137205E-06                                    |
| 136.000     | 9.999975E-01          | 5.489838E-08                                    | 9.997262E-01          | 4.046833E-06                                    |
| 137.000     | 9.999976E-01          | 5.331439E-08                                    | 9.997301E-01          | 3.959075E-06                                    |
| 138.000     | 9.999976E-01          | 5.178713E-08                                    | 9.997340E-01          | 3.873836E-06                                    |
| 139.000     | 9.999977E-01          | 5.031416E-08                                    | 9.997378E-01          | 3.791026E-06                                    |
| 140.000     | 9.999977E-01          | 4.889318E-08                                    | 9.997415E-01          | 3.710560E-06                                    |

R.K.H. Gebel. Blackbody functions.

| T     | $Q_{0,\Delta\lambda}(T)$                                     | $N_{0,\Delta\lambda}(T)$                         |
|-------|--------------------------------------------------------------|--------------------------------------------------|
| °K    | Quanta $s^{-1} m^{-2} sr^{-1}$<br>0.7 $\mu m$ to 1.3 $\mu m$ | $W m^{-2} sr^{-1}$<br>0.7 $\mu m$ to 1.3 $\mu m$ |
| 50    | 0.                                                           | 0.                                               |
| 100   | 0.                                                           | 0.                                               |
| 150   | 0.                                                           | 0.                                               |
| 200   | 0.                                                           | 0.                                               |
| 250   | 0.                                                           | 5.7837055E-14                                    |
| 300   | 7.4183812E 08                                                | 1.1663439E-10                                    |
| 350   | 1.6986542E 11                                                | 2.6834383E-08                                    |
| 400   | 1.0201348E 13                                                | 1.6195412E-06                                    |
| 450   | 2.5054792E 14                                                | 3.9975798E-05                                    |
| 500   | 3.2861920E 15                                                | 5.2597936E-04                                    |
| 600   | 1.6065258E 17                                                | 2.6028073E-02                                    |
| 700   | 2.6611040E 18                                                | 4.3566429E-01                                    |
| 800   | 2.2343580E 19                                                | 3.6970270E 00                                    |
| 900   | 1.1902313E 20                                                | 1.9906768E 01                                    |
| 1000  | 4.6040562E 20                                                | 7.7843011E 01                                    |
| 1500  | 3.0040489E 22                                                | 5.3561037E 03                                    |
| 2000  | 2.7120962E 23                                                | 5.0514432E 04                                    |
| 2500  | 1.0768663E 24                                                | 2.0823538E 05                                    |
| 3000  | 2.7915432E 24                                                | 5.5441931E 05                                    |
| 3500  | 5.6271337E 24                                                | 1.1402698E 06                                    |
| 4000  | 9.6539069E 24                                                | 1.9864411E 06                                    |
| 4500  | 1.4842187E 25                                                | 3.0905220E 06                                    |
| 5000  | 2.1106981E 25                                                | 4.4364782E 06                                    |
| 6000  | 3.6428843E 25                                                | 7.7627298E 06                                    |
| 7000  | 5.4757802E 25                                                | 1.1778684E 07                                    |
| 8000  | 7.5370316E 25                                                | 1.5322591E 07                                    |
| 9000  | 9.7717252E 25                                                | 2.1269636E 07                                    |
| 10000 | 1.2139436E 26                                                | 2.6527010E 07                                    |

R.K.H. Gebel, Blackbody functions.

| T     | $Q_{0,\Delta\lambda}(T)$                                    | $N_{0,\Delta\lambda}(T)$                        |
|-------|-------------------------------------------------------------|-------------------------------------------------|
| °K    | Quanta $s^{-1}m^{-2}sr^{-1}$<br>1.95 $\mu m$ to 2.5 $\mu m$ | $Wm^{-2}sr^{-1}$<br>1.95 $\mu m$ to 2.5 $\mu m$ |
| 50    | 0.                                                          | 0.                                              |
| 100   | 0.                                                          | 0.                                              |
| 150   | 2.2767796E 07                                               | 1.8683240E-12                                   |
| 200   | 4.5452656E 11                                               | 3.7460753E-08                                   |
| 250   | 1.8221158E 14                                               | 1.5154718E-05                                   |
| 300   | 1.0268192E 16                                               | 8.6135417E-04                                   |
| 350   | 1.8728322E 17                                               | 1.5833121E-02                                   |
| 400   | 1.6798889E 18                                               | 1.4300740E-01                                   |
| 450   | 9.3583790E 18                                               | 8.0154709E-01                                   |
| 500   | 3.7271353E 19                                               | 3.2094156E 00                                   |
| 600   | 3.0060698E 20                                               | 2.6113656E 01                                   |
| 700   | 1.3512100E 21                                               | 1.1818165E 02                                   |
| 800   | 4.2009403E 21                                               | 3.6940652E 02                                   |
| 900   | 1.0197630E 22                                               | 9.0058728E 02                                   |
| 1000  | 2.0798603E 22                                               | 1.8432448E 03                                   |
| 1500  | 1.8091251E 23                                               | 1.6204595E 04                                   |
| 2000  | 5.4930260E 23                                               | 4.9456933E 04                                   |
| 2500  | 1.0958118E 24                                               | 9.8953403E 04                                   |
| 3000  | 1.7719848E 24                                               | 1.6031110E 05                                   |
| 3500  | 2.5395450E 24                                               | 2.3004370E 05                                   |
| 4000  | 3.3720371E 24                                               | 3.0573353E 05                                   |
| 4500  | 4.2516044E 24                                               | 3.8574559E 05                                   |
| 5000  | 5.1660843E 24                                               | 4.6896485E 05                                   |
| 6000  | 7.0684444E 24                                               | 6.4214928E 05                                   |
| 7000  | 9.0364074E 24                                               | 8.2136534E 05                                   |
| 8000  | 1.1046811E 25                                               | 1.0044847E 06                                   |
| 9000  | 1.3086141E 25                                               | 1.1902650E 06                                   |
| 10000 | 1.5146027E 25                                               | 1.3779365E 06                                   |

R.K.H. Gebel, Blackbody functions.

| T     | $Q_{0,\Delta\lambda}(T)$                                      | $N_{0,\Delta\lambda}(T)$                          |
|-------|---------------------------------------------------------------|---------------------------------------------------|
| °K    | Quanta $s^{-1} m^{-2} sr^{-1}$<br>3.35 $\mu m$ to 4.6 $\mu m$ | Wm $^{-2} sr^{-1}$<br>3.35 $\mu m$ to 4.6 $\mu m$ |
| 50    | 0.                                                            | 0.                                                |
| 100   | 5.4699001E 09                                                 | 2.4429245E-10                                     |
| 150   | 2.8545935E 14                                                 | 1.2974000E-05                                     |
| 200   | 7.1826563E 16                                                 | 3.3197829E-03                                     |
| 250   | 2.0904274E 18                                                 | 9.8073232E-02                                     |
| 300   | 2.0415001E 19                                                 | 9.6999071E-01                                     |
| 350   | 1.0597783E 20                                                 | 5.0886340E 00                                     |
| 400   | 3.6890079E 20                                                 | 1.7867749E 01                                     |
| 450   | 9.8102349E 20                                                 | 4.7859531E 01                                     |
| 500   | 2.1571335E 21                                                 | 1.0587125E 02                                     |
| 600   | 7.1065380E 21                                                 | 3.5206619E 02                                     |
| 700   | 1.6806241E 22                                                 | 8.3832422E 02                                     |
| 800   | 3.2263530E 22                                                 | 1.6176934E 03                                     |
| 900   | 5.3871354E 22                                                 | 2.7119188E 03                                     |
| 1000  | 8.1566749E 22                                                 | 4.1191036E 03                                     |
| 1500  | 2.9637541E 23                                                 | 1.5102841E 04                                     |
| 2000  | 5.9642904E 23                                                 | 3.0518814E 04                                     |
| 2500  | 9.4316875E 23                                                 | 4.8372278E 04                                     |
| 3000  | 1.3167800E 24                                                 | 6.7631466E 04                                     |
| 3500  | 1.7069404E 24                                                 | 8.7757305E 04                                     |
| 4000  | 2.1079153E 24                                                 | 1.0844984E 05                                     |
| 4500  | 2.5163094E 24                                                 | 1.2953132E 05                                     |
| 5000  | 2.9299995E 24                                                 | 1.5089051E 05                                     |
| 6000  | 3.7681501E 24                                                 | 1.9417380E 05                                     |
| 7000  | 4.6156619E 24                                                 | 2.3794821E 05                                     |
| 8000  | 5.4690918E 24                                                 | 2.8203313E 05                                     |
| 9000  | 6.3264961E 24                                                 | 3.2632662E 05                                     |
| 10000 | 7.1866964E 24                                                 | 3.7076683E 05                                     |

R.K.H. Gebel. Blackbody functions.

| T     | $Q_{0,\Delta\lambda}(T)$                                    | $N_{0,\Delta\lambda}(T)$                       |
|-------|-------------------------------------------------------------|------------------------------------------------|
| °K    | Quanta $s^{-1} m^{-2} sr^{-1}$<br>8.5 $\mu m$ to 11 $\mu m$ | $Wm^{-2} sr^{-1}$<br>8.5 $\mu m$ to 11 $\mu m$ |
| 50    | 8.0834258E 10                                               | 1.5198065E-02                                  |
| 100   | 8.0764829E 16                                               | 1.5720068E-03                                  |
| 150   | 9.2918901E 18                                               | 1.8464945E-01                                  |
| 200   | 1.0383264E 20                                               | 2.0887568E 00                                  |
| 250   | 4.4922768E 20                                               | 9.1072010E 00                                  |
| 300   | 1.2043311E 21                                               | 2.4543598E 01                                  |
| 350   | 2.4539725E 21                                               | 5.0190941E 01                                  |
| 400   | 4.2122046E 21                                               | 8.6399202E 01                                  |
| 450   | 6.4498190E 21                                               | 1.3257345E 02                                  |
| 500   | 9.1181089E 21                                               | 1.8772594E 02                                  |
| 600   | 1.5534051E 22                                               | 3.2057834E 02                                  |
| 700   | 2.3073546E 22                                               | 4.7694338E 02                                  |
| 800   | 3.1439670E 22                                               | 6.5063366E 02                                  |
| 900   | 4.0419372E 22                                               | 8.3719707E 02                                  |
| 1000  | 4.9861728E 22                                               | 1.0334741E 03                                  |
| 1500  | 1.0111305E 23                                               | 2.0997444E 03                                  |
| 2000  | 1.5563079E 23                                               | 3.2347047E 03                                  |
| 2500  | 2.1153334E 23                                               | 4.3988032E 03                                  |
| 3000  | 2.6814533E 23                                               | 5.5778329E 03                                  |
| 3500  | 3.2516785E 23                                               | 6.7655038E 03                                  |
| 4000  | 3.8244885E 23                                               | 7.9586158E 03                                  |
| 4500  | 4.3990297E 23                                               | 9.1553723E 03                                  |
| 5000  | 4.9747868E 23                                               | 1.0354688E 04                                  |
| 6000  | 6.1287390E 23                                               | 1.2758454E 04                                  |
| 7000  | 7.2847858E 23                                               | 1.5166629E 04                                  |
| 8000  | 8.4421442E 23                                               | 1.7577565E 04                                  |
| 9000  | 9.6003779E 23                                               | 1.9990344E 04                                  |
| 10000 | 1.0759225E 24                                               | 2.2404415E 04                                  |

R.K.H. Gebel, Blackbody functions.

| T      | $Q_{O,\Delta\lambda}(T)$                                   | $N_{O,\Delta\lambda}(T)$                      |
|--------|------------------------------------------------------------|-----------------------------------------------|
| °K     | Quanta $s^{-1} m^{-2} sr^{-1}$<br>3.4 $\mu m$ to 4 $\mu m$ | $Wm^{-2} sr^{-1}$<br>3.4 $\mu m$ to 4 $\mu m$ |
| 290.00 | 3.0878030E+18                                              | 1.6293597E-01                                 |
| 291.00 | 3.2308391E+18                                              | 1.7049867E-01                                 |
| 292.00 | 3.3794661E+18                                              | 1.7835770E-01                                 |
| 293.00 | 3.5338591E+18                                              | 1.8652234E-01                                 |
| 294.00 | 3.6941971E+18                                              | 1.9500212E-01                                 |
| 295.00 | 3.8606630E+18                                              | 2.0380678E-01                                 |
| 296.00 | 4.0334440E+18                                              | 2.1294624E-01                                 |
| 297.00 | 4.2127312E+18                                              | 2.2243069E-01                                 |
| 298.00 | 4.3987198E+18                                              | 2.3227051E-01                                 |
| 299.00 | 4.5916092E+18                                              | 2.4247631E-01                                 |
| 299.10 | 4.6112855E+18                                              | 2.4351743E-01                                 |
| 299.20 | 4.6310330E+18                                              | 2.4456233E-01                                 |
| 299.30 | 4.6508520E+18                                              | 2.4561102E-01                                 |
| 299.40 | 4.6707427E+18                                              | 2.4666351E-01                                 |
| 299.50 | 4.6907052E+18                                              | 2.4771982E-01                                 |
| 299.60 | 4.7107398E+18                                              | 2.4877995E-01                                 |
| 299.70 | 4.7308467E+18                                              | 2.4984391E-01                                 |
| 299.80 | 4.7510261E+18                                              | 2.5091172E-01                                 |
| 299.90 | 4.7712781E+18                                              | 2.5198338E-01                                 |
| 299.91 | 4.7733074E+18                                              | 2.5209076E-01                                 |
| 299.92 | 4.7753373E+18                                              | 2.5219817E-01                                 |
| 299.93 | 4.7773680E+18                                              | 2.5230563E-01                                 |
| 299.94 | 4.7793994E+18                                              | 2.5241313E-01                                 |
| 299.95 | 4.7814315E+18                                              | 2.5252066E-01                                 |
| 299.96 | 4.7834644E+18                                              | 2.5262823E-01                                 |
| 299.97 | 4.7854980E+18                                              | 2.5273584E-01                                 |
| 299.98 | 4.7875323E+18                                              | 2.5284349E-01                                 |
| 299.99 | 4.7895673E+18                                              | 2.5295118E-01                                 |
| 300.00 | 4.7916031E+18                                              | 2.5305891E-01                                 |

R.K.H. Gebel, Blackbody functions.

| T      | $Q_{0,\Delta\lambda}(T)$                                    | $N_{0,\Delta\lambda}(T)$                       |
|--------|-------------------------------------------------------------|------------------------------------------------|
| °K     | Quanta $s^{-1} m^{-2} sr^{-1}$<br>8.5 $\mu m$ to 11 $\mu m$ | $Wm^{-2} sr^{-1}$<br>8.5 $\mu m$ to 11 $\mu m$ |
| 290.00 | 1.0152892E+21                                               | 2.0672363E+01                                  |
| 291.00 | 1.0333033E+21                                               | 2.1041108E+01                                  |
| 292.00 | 1.0515140E+21                                               | 2.1413911E+01                                  |
| 293.00 | 1.0699219E+21                                               | 2.1790785E+01                                  |
| 294.00 | 1.0885273E+21                                               | 2.2171737E+01                                  |
| 295.00 | 1.1073307E+21                                               | 2.2556777E+01                                  |
| 296.00 | 1.1263324E+21                                               | 2.2945914E+01                                  |
| 297.00 | 1.1455330E+21                                               | 2.3339156E+01                                  |
| 298.00 | 1.1649327E+21                                               | 2.3736512E+01                                  |
| 299.00 | 1.1845319E+21                                               | 2.4137990E+01                                  |
| 299.10 | 1.1865028E+21                                               | 2.4178365E+01                                  |
| 299.20 | 1.1884757E+21                                               | 2.4218781E+01                                  |
| 299.30 | 1.1904506E+21                                               | 2.4259239E+01                                  |
| 299.40 | 1.1924276E+21                                               | 2.4299737E+01                                  |
| 299.50 | 1.1944065E+21                                               | 2.4340277E+01                                  |
| 299.60 | 1.1963874E+21                                               | 2.4380859E+01                                  |
| 299.70 | 1.1983703E+21                                               | 2.4421482E+01                                  |
| 299.80 | 1.2003552E+21                                               | 2.4462146E+01                                  |
| 299.90 | 1.2023421E+21                                               | 2.4502851E+01                                  |
| 299.91 | 1.2025409E+21                                               | 2.4506924E+01                                  |
| 299.92 | 1.2027398E+21                                               | 2.4510997E+01                                  |
| 299.93 | 1.2029386E+21                                               | 2.4515071E+01                                  |
| 299.94 | 1.2031375E+21                                               | 2.4519145E+01                                  |
| 299.95 | 1.2033363E+21                                               | 2.4523219E+01                                  |
| 299.96 | 1.2035353E+21                                               | 2.4527294E+01                                  |
| 299.97 | 1.2037342E+21                                               | 2.4531370E+01                                  |
| 299.98 | 1.2039331E+21                                               | 2.4535445E+01                                  |
| 299.99 | 1.2041321E+21                                               | 2.4539521E+01                                  |
| 300.00 | 1.2043311E+21                                               | 2.4543598E+01                                  |

R.K.H. Gebel, Blackbody functions.

| $T_b$              | $\Delta Q_{0,\Delta\lambda}(T_b)$                                                                                                          | $\Delta N_{0,\Delta\lambda}(T_b)$                                                                                       |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| $^{\circ}\text{K}$ | $\Delta(300^{\circ}\text{K}-T_b)$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$<br>$3.4\text{ }\mu\text{m to }4\text{ }\mu\text{m}$ | $\Delta(300^{\circ}\text{K}-T_b)$<br>$\text{Wm}^{-2}\text{sr}^{-1}$<br>$3.4\text{ }\mu\text{m to }4\text{ }\mu\text{m}$ |
| 290.00             | 1.7038001E+18                                                                                                                              | 9.0122943E-02                                                                                                           |
| 291.00             | 1.5607640E+18                                                                                                                              | 8.2560235E-02                                                                                                           |
| 292.00             | 1.4121370E+18                                                                                                                              | 7.4701213E-02                                                                                                           |
| 293.00             | 1.2577440E+18                                                                                                                              | 6.6536568E-02                                                                                                           |
| 294.00             | 1.0974060E+18                                                                                                                              | 5.8056785E-02                                                                                                           |
| 295.00             | 9.3094010E+17                                                                                                                              | 4.9252133E-02                                                                                                           |
| 296.00             | 7.5815911E+17                                                                                                                              | 4.0112663E-02                                                                                                           |
| 297.00             | 5.7887195E+17                                                                                                                              | 3.0628213E-02                                                                                                           |
| 298.00             | 3.9288337E+17                                                                                                                              | 2.0788396E-02                                                                                                           |
| 299.00             | 1.9999394E+17                                                                                                                              | 1.0582603E-02                                                                                                           |
| 299.10             | 1.8031764E+17                                                                                                                              | 9.5414800E-03                                                                                                           |
| 299.20             | 1.6057010E+17                                                                                                                              | 8.4965780E-03                                                                                                           |
| 299.30             | 1.4075111E+17                                                                                                                              | 7.4478861E-03                                                                                                           |
| 299.40             | 1.2086045E+17                                                                                                                              | 6.3953934E-03                                                                                                           |
| 299.50             | 1.0089792E+17                                                                                                                              | 5.3390888E-03                                                                                                           |
| 299.60             | 8.0863328E+16                                                                                                                              | 4.2789613E-03                                                                                                           |
| 299.70             | 6.0756444E+16                                                                                                                              | 3.2149997E-03                                                                                                           |
| 299.80             | 4.0577067E+16                                                                                                                              | 2.1471931E-03                                                                                                           |
| 299.90             | 2.0324989E+16                                                                                                                              | 1.0755302E-03                                                                                                           |
| 299.91             | 1.8295774E+16                                                                                                                              | 9.6815143E-04                                                                                                           |
| 299.92             | 1.6265830E+16                                                                                                                              | 8.6073393E-04                                                                                                           |
| 299.93             | 1.4235157E+16                                                                                                                              | 7.5327774E-04                                                                                                           |
| 299.94             | 1.2203754E+16                                                                                                                              | 6.4578285E-04                                                                                                           |
| 299.95             | 1.0171621E+16                                                                                                                              | 5.3824923E-04                                                                                                           |
| 299.96             | 8.1387583E+15                                                                                                                              | 4.3067689E-04                                                                                                           |
| 299.97             | 6.1051648E+15                                                                                                                              | 3.2306580E-04                                                                                                           |
| 299.98             | 4.0708407E+15                                                                                                                              | 2.1541597E-04                                                                                                           |
| 299.99             | 2.0357858E+15                                                                                                                              | 1.0772737E-04                                                                                                           |
| 300.00             | 0.0000000E-99                                                                                                                              | 0.0000000E-99                                                                                                           |

R.K.H. Gebel, Blackbody functions.

| $T_b$  | $\Delta Q_{0,\Delta\lambda}(T_b)$<br>$\Delta(300^\circ\text{K}-T_b)$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$<br>$8.5\mu\text{m to }11\mu\text{m}$ | $\Delta N_{0,\Delta\lambda}(T_b)$<br>$\Delta(300^\circ\text{K}-T_b)$<br>$\text{Wm}^{-2}\text{sr}^{-1}$<br>$8.5\mu\text{m to }11\mu\text{m}$ |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 290.00 | 1.8904182E+20                                                                                                                                                  | 3.8712345E-00                                                                                                                               |
| 291.00 | 1.7102775E+20                                                                                                                                                  | 3.5024904E-00                                                                                                                               |
| 292.00 | 1.5281702E+20                                                                                                                                                  | 3.1296865E-00                                                                                                                               |
| 293.00 | 1.3440917E+20                                                                                                                                                  | 2.7528132E-00                                                                                                                               |
| 294.00 | 1.1580377E+20                                                                                                                                                  | 2.3718611E-00                                                                                                                               |
| 295.00 | 9.7000404E+19                                                                                                                                                  | 1.9868211E-00                                                                                                                               |
| 296.00 | 7.7998647E+19                                                                                                                                                  | 1.5976842E-00                                                                                                                               |
| 297.00 | 5.8798108E+19                                                                                                                                                  | 1.2044419E-00                                                                                                                               |
| 298.00 | 3.9398401E+19                                                                                                                                                  | 8.0708588E-01                                                                                                                               |
| 299.00 | 1.9799152E+19                                                                                                                                                  | 4.0560784E-01                                                                                                                               |
| 299.10 | 1.7828238E+19                                                                                                                                                  | 3.6523302E-01                                                                                                                               |
| 299.20 | 1.5855325E+19                                                                                                                                                  | 3.2481690E-01                                                                                                                               |
| 299.30 | 1.3880412E+19                                                                                                                                                  | 2.8435946E-01                                                                                                                               |
| 299.40 | 1.1903499E+19                                                                                                                                                  | 2.4386071E-01                                                                                                                               |
| 299.50 | 9.9245864E+18                                                                                                                                                  | 2.0332062E-01                                                                                                                               |
| 299.60 | 7.9436721E+18                                                                                                                                                  | 1.6273920E-01                                                                                                                               |
| 299.70 | 5.9607567E+18                                                                                                                                                  | 1.2211643E-01                                                                                                                               |
| 299.80 | 3.9758398E+18                                                                                                                                                  | 8.1452321E-02                                                                                                                               |
| 299.90 | 1.9889210E+18                                                                                                                                                  | 4.0746844E-02                                                                                                                               |
| 299.91 | 1.7901190E+18                                                                                                                                                  | 3.6674021E-02                                                                                                                               |
| 299.92 | 1.5912969E+18                                                                                                                                                  | 3.2600784E-02                                                                                                                               |
| 299.93 | 1.3924549E+18                                                                                                                                                  | 2.8527134E-02                                                                                                                               |
| 299.94 | 1.1935928E+18                                                                                                                                                  | 2.4453070E-02                                                                                                                               |
| 299.95 | 9.9471079E+17                                                                                                                                                  | 2.0378593E-02                                                                                                                               |
| 299.96 | 7.9580868E+17                                                                                                                                                  | 1.6303702E-02                                                                                                                               |
| 299.97 | 5.9688655E+17                                                                                                                                                  | 1.2228397E-02                                                                                                                               |
| 299.98 | 3.9794439E+17                                                                                                                                                  | 8.1526785E-03                                                                                                                               |
| 299.99 | 1.9898220E+17                                                                                                                                                  | 4.0765461E-03                                                                                                                               |
| 300.00 | 0.0000000E-99                                                                                                                                                  | 0.0000000E-99                                                                                                                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 50^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 0.                                                                           | 0.                                                        |
| 2100                                   | 2200                                   | 0.                                                                           | 0.                                                        |
| 2200                                   | 2300                                   | 0.                                                                           | 0.                                                        |
| 2300                                   | 2400                                   | 0.                                                                           | 0.                                                        |
| 2400                                   | 2500                                   | 0.                                                                           | 0.                                                        |
| 2500                                   | 2600                                   | 0.                                                                           | 0.                                                        |
| 2600                                   | 2700                                   | 0.                                                                           | 0.                                                        |
| 2700                                   | 2800                                   | 0.                                                                           | 0.                                                        |
| 2800                                   | 2900                                   | 0.                                                                           | 0.                                                        |
| 2900                                   | 3000                                   | 0.                                                                           | 0.                                                        |
| 3000                                   | 3200                                   | 0.                                                                           | 0.                                                        |
| 3200                                   | 3400                                   | 0.                                                                           | 0.                                                        |
| 3400                                   | 3600                                   | 0.                                                                           | 0.                                                        |
| 3600                                   | 3800                                   | 0.                                                                           | 0.                                                        |
| 3800                                   | 4000                                   | 0.                                                                           | 0.                                                        |
| 4000                                   | 4200                                   | 0.                                                                           | 0.                                                        |
| 4200                                   | 4400                                   | 0.                                                                           | 0.                                                        |
| 4400                                   | 4600                                   | 0.                                                                           | 0.                                                        |
| 4600                                   | 4800                                   | 0.                                                                           | 0.                                                        |
| 4800                                   | 5000                                   | 0.                                                                           | 0.                                                        |
| 5000                                   | 5500                                   | 0.                                                                           | 0.                                                        |
| 5500                                   | 6000                                   | 0.                                                                           | 0.                                                        |
| 6000                                   | 6500                                   | 0.                                                                           | 9.25405340-17                                             |
| 6500                                   | 7000                                   | 6.14289320 04                                                                | 1.72742330-15                                             |
| 7000                                   | 7500                                   | 7.81822770 05                                                                | 2.12457640-14                                             |
| 7500                                   | 8000                                   | 7.37705630 06                                                                | 1.87178650-13                                             |
| 8000                                   | 8500                                   | 5.24268020 07                                                                | 1.25184210-12                                             |
| 8500                                   | 9000                                   | 2.95406150 08                                                                | 6.65946360-12                                             |
| 9000                                   | 9500                                   | 1.36934580 09                                                                | 2.92338860-11                                             |
| 9500                                   | 10000                                  | 5.38000170 09                                                                | 1.09065390-10                                             |
| 10000                                  | 11000                                  | 7.37893830 10                                                                | 1.37484550-09                                             |
| 11000                                  | 12000                                  | 5.24596780 11                                                                | 8.95679620-09                                             |
| 12000                                  | 13000                                  | 2.68069630 12                                                                | 4.22198110-08                                             |
| 13000                                  | 14000                                  | 1.05809530 13                                                                | 1.54605250-07                                             |
| 14000                                  | 15000                                  | 3.40144210 13                                                                | 4.63414270-07                                             |
| 15000                                  | 16000                                  | 9.26678120 13                                                                | 1.18238530-06                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 100^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>W $\text{m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 0.                                                                           | 0.                                                        |
| 2100                                   | 2200                                   | 0.                                                                           | 0.                                                        |
| 2200                                   | 2300                                   | 0.                                                                           | 0.                                                        |
| 2300                                   | 2400                                   | 0.                                                                           | 0.                                                        |
| 2400                                   | 2500                                   | 0.                                                                           | 0.                                                        |
| 2500                                   | 2600                                   | 0.                                                                           | 0.                                                        |
| 2600                                   | 2700                                   | 0.                                                                           | 0.                                                        |
| 2700                                   | 2800                                   | 0.                                                                           | 0.                                                        |
| 2800                                   | 2900                                   | 0.                                                                           | 0.                                                        |
| 2900                                   | 3000                                   | 0.                                                                           | 0.                                                        |
| 3000                                   | 3200                                   | 0.                                                                           | 7.40324270-16                                             |
| 3200                                   | 3400                                   | 1.34026760 05                                                                | 8.63711650-15                                             |
| 3400                                   | 3600                                   | 1.34026760 06                                                                | 7.46493640-14                                             |
| 3600                                   | 3800                                   | 9.47122450 06                                                                | 5.04284220-13                                             |
| 3800                                   | 4000                                   | 5.48169450 07                                                                | 2.77559910-12                                             |
| 4000                                   | 4200                                   | 2.66043120 08                                                                | 1.28174810-11                                             |
| 4200                                   | 4400                                   | 1.10674830 09                                                                | 5.08876700-11                                             |
| 4400                                   | 4600                                   | 4.03139100 09                                                                | 1.77228080-10                                             |
| 4600                                   | 4800                                   | 1.30745790 10                                                                | 5.50630370-10                                             |
| 4800                                   | 5000                                   | 3.82986830 10                                                                | 1.54780570-09                                             |
| 5000                                   | 5500                                   | 5.90315060 11                                                                | 2.19975280-08                                             |
| 5500                                   | 6000                                   | 4.19677420 12                                                                | 1.43308740-07                                             |
| 6000                                   | 6500                                   | 2.14455700 13                                                                | 6.75516980-07                                             |
| 6500                                   | 7000                                   | 8.46476270 13                                                                | 2.47368390-06                                             |
| 7000                                   | 7500                                   | 2.72115370 14                                                                | 7.41462830-06                                             |
| 7500                                   | 8000                                   | 7.41342490 14                                                                | 1.89181650-05                                             |
| 8000                                   | 8500                                   | 1.76439840 15                                                                | 4.23330990-05                                             |
| 8500                                   | 9000                                   | 3.75585780 15                                                                | 8.50219980-05                                             |
| 9000                                   | 9500                                   | 7.28437640 15                                                                | 1.56067290-04                                             |
| 9500                                   | 10000                                  | 1.30629770 16                                                                | 2.65633600-04                                             |
| 10000                                  | 11000                                  | 5.66615620 16                                                                | 1.06528290-03                                             |
| 11000                                  | 12000                                  | 1.28307870 17                                                                | 2.20644840-03                                             |
| 12000                                  | 13000                                  | 2.48554850 17                                                                | 3.93717700-03                                             |
| 13000                                  | 14000                                  | 4.26960120 17                                                                | 6.26764400-03                                             |
| 14000                                  | 15000                                  | 6.67504710 17                                                                | 9.12872370-03                                             |
| 15000                                  | 16000                                  | 9.68266900 17                                                                | 1.23933210-02                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 200^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 0.                                                                           | 0.                                                        |
| 1320                                   | 1330                                   | 0.                                                                           | 0.                                                        |
| 1330                                   | 1340                                   | 0.                                                                           | 0.                                                        |
| 1340                                   | 1350                                   | 0.                                                                           | 0.                                                        |
| 1350                                   | 1360                                   | 0.                                                                           | 0.                                                        |
| 1360                                   | 1370                                   | 0.                                                                           | 0.                                                        |
| 1370                                   | 1380                                   | 0.                                                                           | 0.                                                        |
| 1380                                   | 1390                                   | 0.                                                                           | 0.                                                        |
| 1390                                   | 1400                                   | 0.                                                                           | 0.                                                        |
| 1400                                   | 1410                                   | 0.                                                                           | 0.                                                        |
| 1410                                   | 1420                                   | 0.                                                                           | 0.                                                        |
| 1420                                   | 1430                                   | 0.                                                                           | 0.                                                        |
| 1430                                   | 1440                                   | 0.                                                                           | 0.                                                        |
| 1440                                   | 1450                                   | 0.                                                                           | 0.                                                        |
| 1450                                   | 1460                                   | 0.                                                                           | 0.                                                        |
| 1460                                   | 1470                                   | 0.                                                                           | 0.                                                        |
| 1470                                   | 1480                                   | 0.                                                                           | 0.                                                        |
| 1480                                   | 1490                                   | 0.                                                                           | 0.                                                        |
| 1490                                   | 1500                                   | 0.                                                                           | 0.                                                        |
| 1500                                   | 1510                                   | 0.                                                                           | 0.                                                        |
| 1510                                   | 1520                                   | 0.                                                                           | 0.                                                        |
| 1520                                   | 1530                                   | 0.                                                                           | 0.                                                        |
| 1530                                   | 1540                                   | 0.                                                                           | 1.97419810-15                                             |
| 1540                                   | 1550                                   | 0.                                                                           | 0.                                                        |
| 1550                                   | 1560                                   | 0.                                                                           | 1.97419810-15                                             |
| 1560                                   | 1570                                   | 0.                                                                           | 0.                                                        |
| 1570                                   | 1580                                   | 0.                                                                           | 1.97419810-15                                             |
| 1580                                   | 1590                                   | 0.                                                                           | 1.97419810-15                                             |
| 1590                                   | 1600                                   | 0.                                                                           | 3.94839610-15                                             |
| 1600                                   | 1610                                   | 0.                                                                           | 3.94839610-15                                             |
| 1610                                   | 1620                                   | 0.                                                                           | 3.94839610-15                                             |
| 1620                                   | 1630                                   | 0.                                                                           | 7.99679220-15                                             |
| 1630                                   | 1640                                   | 0.                                                                           | 7.89679220-15                                             |
| 1640                                   | 1650                                   | 3.57404700 05                                                                | 9.87099030-15                                             |
| 1650                                   | 1660                                   | 0.                                                                           | 1.18451880-14                                             |
| 1660                                   | 1670                                   | 0.                                                                           | 1.57935840-14                                             |
| 1670                                   | 1680                                   | 3.57404700 05                                                                | 2.17161790-14                                             |
| 1680                                   | 1690                                   | 0.                                                                           | 2.36903770-14                                             |
| 1690                                   | 1700                                   | 3.57404700 05                                                                | 3.15871690-14                                             |
| 1700                                   | 1710                                   | 3.57404700 05                                                                | 3.94839610-14                                             |
| 1710                                   | 1720                                   | 3.57404700 05                                                                | 4.93549520-14                                             |
| 1720                                   | 1730                                   | 7.14809390 05                                                                | 5.92259420-14                                             |
| 1730                                   | 1740                                   | 3.57404700 05                                                                | 7.50195260-14                                             |
| 1740                                   | 1750                                   | 1.07221410 06                                                                | 9.27873090-14                                             |
| 1750                                   | 1760                                   | 7.14809390 05                                                                | 1.12529290-13                                             |
| 1760                                   | 1770                                   | 1.42961880 06                                                                | 1.38193860-13                                             |
| 1770                                   | 1780                                   | 1.42961880 06                                                                | 1.69781030-13                                             |
| 1780                                   | 1790                                   | 1.78702350 06                                                                | 2.07290800-13                                             |
| 1790                                   | 1800                                   | 2.50183290 06                                                                | 2.50723150-13                                             |
| 1800                                   | 1810                                   | 2.50183290 06                                                                | 3.06000700-13                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

$T = 200^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 3.57404700 06                                                                | 3.69175040-13                                             |
| 1820                                   | 1830                                   | 3.93145170 06                                                                | 4.48142960-13                                             |
| 1830                                   | 1840                                   | 5.00366580 06                                                                | 5.38956070-13                                             |
| 1840                                   | 1850                                   | 6.07587990 06                                                                | 6.49511160-13                                             |
| 1850                                   | 1860                                   | 7.50549860 06                                                                | 7.79808230-13                                             |
| 1860                                   | 1870                                   | 8.57771270 06                                                                | 9.35769880-13                                             |
| 1870                                   | 1880                                   | 1.07221410 07                                                                | 1.11739610-12                                             |
| 1880                                   | 1890                                   | 1.25091640 07                                                                | 1.33455790-12                                             |
| 1890                                   | 1900                                   | 1.53684020 07                                                                | 1.58922940-12                                             |
| 1900                                   | 1910                                   | 1.78702350 07                                                                | 1.88930750-12                                             |
| 1910                                   | 1920                                   | 2.18016870 07                                                                | 2.24071480-12                                             |
| 1920                                   | 1930                                   | 2.57331380 07                                                                | 2.65529640-12                                             |
| 1930                                   | 1940                                   | 3.03793990 07                                                                | 3.13897490-12                                             |
| 1940                                   | 1950                                   | 3.64552790 07                                                                | 3.70162140-12                                             |
| 1950                                   | 1960                                   | 4.28885640 07                                                                | 4.35902930-12                                             |
| 1960                                   | 1970                                   | 5.03940620 07                                                                | 5.12501820-12                                             |
| 1970                                   | 1980                                   | 6.00439390 07                                                                | 6.01538150-12                                             |
| 1980                                   | 1990                                   | 7.04087250 07                                                                | 7.04591290-12                                             |
| 1990                                   | 2000                                   | 8.25604850 07                                                                | 8.23832850-12                                             |
| 2000                                   | 2010                                   | 9.72140780 07                                                                | 9.61829300-12                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 200^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 2.12834500 09                                                                  | 2.05079690-10                                              |
| 2100                                           | 2200                                           | 8.85398660 09                                                                  | 8.14202710-10                                              |
| 2200                                           | 2300                                           | 3.22511280 10                                                                  | 2.83564930-09                                              |
| 2300                                           | 2400                                           | 1.04596630 11                                                                  | 8.81008590-09                                              |
| 2400                                           | 2500                                           | 3.06399470 11                                                                  | 2.47648910-08                                              |
| 2500                                           | 2600                                           | 8.20420700 11                                                                  | 6.37374380-08                                              |
| 2600                                           | 2700                                           | 2.02898070 12                                                                  | 1.51723860-07                                              |
| 2700                                           | 2800                                           | 4.67457610 12                                                                  | 3.36959340-07                                              |
| 2800                                           | 2900                                           | 1.01104750 13                                                                  | 7.03400090-07                                              |
| 2900                                           | 3000                                           | 2.06623610 13                                                                  | 1.38907950-06                                              |
| 3000                                           | 3200                                           | 1.14544710 14                                                                  | 7.29660080-06                                              |
| 3200                                           | 3400                                           | 3.59089870 14                                                                  | 2.15117370-05                                              |
| 3400                                           | 3600                                           | 9.76494080 14                                                                  | 5.52032470-05                                              |
| 3600                                           | 3800                                           | 2.35764530 15                                                                  | 1.26165090-04                                              |
| 3800                                           | 4000                                           | 5.14863450 15                                                                  | 2.61535240-04                                              |
| 4000                                           | 4200                                           | 1.03232140 16                                                                  | 4.99032060-04                                              |
| 4200                                           | 4400                                           | 1.92374590 16                                                                  | 8.87024440-04                                              |
| 4400                                           | 4600                                           | 3.36550060 16                                                                  | 1.48328420-03                                              |
| 4600                                           | 4800                                           | 5.57360530 16                                                                  | 2.35252460-03                                              |
| 4800                                           | 5000                                           | 8.79891470 16                                                                  | 3.56303050-03                                              |
| 5000                                           | 5500                                           | 4.53292490 17                                                                  | 1.70445260-02                                              |
| 5500                                           | 6000                                           | 1.02646290 18                                                                  | 3.53031750-02                                              |
| 6000                                           | 6500                                           | 1.98843880 18                                                                  | 6.29948320-02                                              |
| 6500                                           | 7000                                           | 3.41568090 18                                                                  | 1.00282300-01                                              |
| 7000                                           | 7500                                           | 5.34003770 18                                                                  | 1.46059580-01                                              |
| 7500                                           | 8000                                           | 7.74613520 18                                                                  | 1.98293130-01                                              |
| 8000                                           | 8500                                           | 1.05782740 19                                                                  | 2.54468990-01                                              |
| 8500                                           | 9000                                           | 1.37523440 19                                                                  | 3.12000960-01                                              |
| 9000                                           | 9500                                           | 1.71688030 19                                                                  | 3.68529480-01                                              |
| 9500                                           | 10000                                          | 2.07241580 19                                                                  | 4.22098030-01                                              |
| 10000                                          | 11000                                          | 5.21873060 19                                                                  | 9.86127880-01                                              |
| 11000                                          | 12000                                          | 6.58319750 19                                                                  | 1.13647360 00                                              |
| 12000                                          | 13000                                          | 7.78805230 19                                                                  | 1.23739070 00                                              |
| 13000                                          | 14000                                          | 8.78290190 19                                                                  | 1.29241220 00                                              |
| 14000                                          | 15000                                          | 9.55218980 19                                                                  | 1.30888930 00                                              |
| 15000                                          | 15000                                          | 1.01036670 20                                                                  | 1.29527510 00                                              |

R.K.H. Gebel, blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 300^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 800                                            | 810                                            | 0.                                                                             | 0.                                                         |
| 810                                            | 820                                            | 0.                                                                             | 0.                                                         |
| 820                                            | 830                                            | 0.                                                                             | 0.                                                         |
| 830                                            | 840                                            | 0.                                                                             | 0.                                                         |
| 840                                            | 850                                            | 0.                                                                             | 0.                                                         |
| 850                                            | 860                                            | 0.                                                                             | 0.                                                         |
| 860                                            | 870                                            | 0.                                                                             | 0.                                                         |
| 870                                            | 880                                            | 0.                                                                             | 0.                                                         |
| 880                                            | 890                                            | 0.                                                                             | 0.                                                         |
| 890                                            | 900                                            | 0.                                                                             | 0.                                                         |
| 900                                            | 910                                            | 0.                                                                             | 0.                                                         |
| 910                                            | 920                                            | 0.                                                                             | 0.                                                         |
| 920                                            | 930                                            | 0.                                                                             | 0.                                                         |
| 930                                            | 940                                            | 0.                                                                             | 0.                                                         |
| 940                                            | 950                                            | 0.                                                                             | 0.                                                         |
| 950                                            | 960                                            | 0.                                                                             | 0.                                                         |
| 960                                            | 970                                            | 0.                                                                             | 0.                                                         |
| 970                                            | 980                                            | 0.                                                                             | 0.                                                         |
| 980                                            | 990                                            | 0.                                                                             | 0.                                                         |
| 990                                            | 1000                                           | 0.                                                                             | 0.                                                         |
| 1000                                           | 1010                                           | 0.                                                                             | 0.                                                         |
| 1010                                           | 1020                                           | 0.                                                                             | 0.                                                         |
| 1020                                           | 1030                                           | 0.                                                                             | 9.99437770-15                                              |
| 1030                                           | 1040                                           | 0.                                                                             | 9.99437770-15                                              |
| 1040                                           | 1050                                           | 0.                                                                             | 9.99437770-15                                              |
| 1050                                           | 1060                                           | 0.                                                                             | 9.99437770-15                                              |
| 1060                                           | 1070                                           | 0.                                                                             | 2.99831330-14                                              |
| 1070                                           | 1080                                           | 0.                                                                             | 2.99831330-14                                              |
| 1080                                           | 1090                                           | 0.                                                                             | 4.99718880-14                                              |
| 1090                                           | 1100                                           | 1.20624090 06                                                                  | 7.99550220-14                                              |
| 1100                                           | 1110                                           | 0.                                                                             | 9.99437770-14                                              |
| 1110                                           | 1120                                           | 1.20624090 06                                                                  | 1.49915670-13                                              |
| 1120                                           | 1130                                           | 1.20624090 06                                                                  | 1.99887550-13                                              |
| 1130                                           | 1140                                           | 1.20624090 06                                                                  | 2.79842580-13                                              |
| 1140                                           | 1150                                           | 2.41248170 06                                                                  | 3.89780730-13                                              |
| 1150                                           | 1160                                           | 2.41248170 06                                                                  | 5.39696400-13                                              |
| 1160                                           | 1170                                           | 4.82496340 06                                                                  | 7.39583950-13                                              |
| 1170                                           | 1180                                           | 6.03120430 06                                                                  | 9.99437770-13                                              |
| 1180                                           | 1190                                           | 8.44368600 06                                                                  | 1.35923540-12                                              |
| 1190                                           | 1200                                           | 1.08561680 07                                                                  | 1.81897670-12                                              |
| 1200                                           | 1210                                           | 1.44748900 07                                                                  | 2.43862820-12                                              |
| 1210                                           | 1220                                           | 1.92998540 07                                                                  | 3.24817270-12                                              |
| 1220                                           | 1230                                           | 2.65372990 07                                                                  | 4.29758240-12                                              |
| 1230                                           | 1240                                           | 3.61872260 07                                                                  | 5.66681210-12                                              |
| 1240                                           | 1250                                           | 4.58371520 07                                                                  | 7.43581700-12                                              |
| 1250                                           | 1260                                           | 6.15182830 07                                                                  | 9.71453510-12                                              |
| 1260                                           | 1270                                           | 8.09181370 07                                                                  | 1.26228990-11                                              |
| 1270                                           | 1280                                           | 1.04942950 08                                                                  | 1.63308130-11                                              |
| 1280                                           | 1290                                           | 1.36305220 08                                                                  | 2.10581540-11                                              |
| 1290                                           | 1300                                           | 1.76111160 08                                                                  | 2.70148030-11                                              |
| 1300                                           | 1310                                           | 2.26773280 08                                                                  | 3.45205810-11                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 300^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 2.90704050 08                                                                | 4.39452790-11                                             |
| 1320                                   | 1330                                   | 3.71522180 08                                                                | 5.57086610-11                                             |
| 1330                                   | 1340                                   | 4.72846410 08                                                                | 7.03604190-11                                             |
| 1340                                   | 1350                                   | 5.99501700 08                                                                | 8.85301980-11                                             |
| 1350                                   | 1360                                   | 7.56313010 08                                                                | 1.10987560-10                                             |
| 1360                                   | 1370                                   | 9.52930270 08                                                                | 1.38642010-10                                             |
| 1370                                   | 1380                                   | 1.19417840 09                                                                | 1.72572920-10                                             |
| 1380                                   | 1390                                   | 1.49332620 09                                                                | 2.14089560-10                                             |
| 1390                                   | 1400                                   | 1.85881720 09                                                                | 2.64701090-10                                             |
| 1400                                   | 1410                                   | 2.30633250 09                                                                | 3.26206490-10                                             |
| 1410                                   | 1420                                   | 2.85396590 09                                                                | 4.00724570-10                                             |
| 1420                                   | 1430                                   | 3.51981080 09                                                                | 4.90703960-10                                             |
| 1430                                   | 1440                                   | 4.32799220 09                                                                | 5.99063000-10                                             |
| 1440                                   | 1450                                   | 5.30263480 09                                                                | 7.29159810-10                                             |
| 1450                                   | 1460                                   | 6.48113210 09                                                                | 8.84892210-10                                             |
| 1460                                   | 1470                                   | 7.89725890 09                                                                | 1.07081760-09                                             |
| 1470                                   | 1480                                   | 9.59323350 09                                                                | 1.29216310-09                                             |
| 1480                                   | 1490                                   | 1.16233370 10                                                                | 1.55495530-09                                             |
| 1490                                   | 1500                                   | 1.40430560 10                                                                | 1.86615020-09                                             |
| 1500                                   | 1510                                   | 1.69211470 10                                                                | 2.23371340-09                                             |
| 1510                                   | 1520                                   | 2.03360150 10                                                                | 2.66673980-09                                             |
| 1520                                   | 1530                                   | 2.43769210 10                                                                | 3.17565350-09                                             |
| 1530                                   | 1540                                   | 2.91463980 10                                                                | 3.77227790-09                                             |
| 1540                                   | 1550                                   | 3.47626550 10                                                                | 4.47008540-09                                             |
| 1550                                   | 1560                                   | 4.13607930 10                                                                | 5.28431730-09                                             |
| 1560                                   | 1570                                   | 4.90940030 10                                                                | 6.23224410-09                                             |
| 1570                                   | 1580                                   | 5.81371900 10                                                                | 7.33335460-09                                             |
| 1580                                   | 1590                                   | 6.86881790 10                                                                | 8.60958670-09                                             |
| 1590                                   | 1600                                   | 8.09713300 10                                                                | 1.00856260-08                                             |
| 1600                                   | 1610                                   | 9.52411590 10                                                                | 1.17891380-08                                             |
| 1610                                   | 1620                                   | 1.11783550 11                                                                | 1.37511340-08                                             |
| 1620                                   | 1630                                   | 1.30920560 11                                                                | 1.60062660-08                                             |
| 1630                                   | 1640                                   | 1.53015270 11                                                                | 1.85931400-08                                             |
| 1640                                   | 1650                                   | 1.78474190 11                                                                | 2.15548040-08                                             |
| 1650                                   | 1660                                   | 2.07750860 11                                                                | 2.49390610-08                                             |
| 1660                                   | 1670                                   | 2.41354320 11                                                                | 2.87989590-08                                             |
| 1670                                   | 1680                                   | 2.79850290 11                                                                | 3.31932270-08                                             |
| 1680                                   | 1690                                   | 3.23873260 11                                                                | 3.81868180-08                                             |
| 1690                                   | 1700                                   | 3.74124040 11                                                                | 4.38514020-08                                             |
| 1700                                   | 1710                                   | 4.31379470 11                                                                | 5.02659330-08                                             |
| 1710                                   | 1720                                   | 4.96504420 11                                                                | 5.75173040-08                                             |
| 1720                                   | 1730                                   | 5.70453010 11                                                                | 6.57009400-08                                             |
| 1730                                   | 1740                                   | 6.54283130 11                                                                | 7.49214630-08                                             |
| 1740                                   | 1750                                   | 7.49151560 11                                                                | 8.52934280-08                                             |
| 1750                                   | 1760                                   | 8.56344160 11                                                                | 9.69421050-08                                             |
| 1760                                   | 1770                                   | 9.77263770 11                                                                | 1.10004240-07                                             |
| 1770                                   | 1780                                   | 1.11346040 12                                                                | 1.24628840-07                                             |
| 1780                                   | 1790                                   | 1.26662170 12                                                                | 1.40978200-07                                             |
| 1790                                   | 1800                                   | 1.43860750 12                                                                | 1.59228670-07                                             |
| 1800                                   | 1810                                   | 1.63144080 12                                                                | 1.79571650-07                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 300^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 1.84733250 12                                                                  | 2.02214720-07                                              |
| 1820                                           | 1830                                           | 2.08869650 12                                                                  | 2.27382540-07                                              |
| 1830                                           | 1840                                           | 2.35815620 12                                                                  | 2.55318020-07                                              |
| 1840                                           | 1850                                           | 2.65856450 12                                                                  | 2.86283460-07                                              |
| 1850                                           | 1860                                           | 2.99302130 12                                                                  | 3.20561740-07                                              |
| 1860                                           | 1870                                           | 3.36488610 12                                                                  | 3.58457550-07                                              |
| 1870                                           | 1880                                           | 3.77779920 12                                                                  | 4.00298680-07                                              |
| 1880                                           | 1890                                           | 4.23569670 12                                                                  | 4.46437360-07                                              |
| 1890                                           | 1900                                           | 4.74283650 12                                                                  | 4.97251590-07                                              |
| 1900                                           | 1910                                           | 5.30380600 12                                                                  | 5.53146610-07                                              |
| 1910                                           | 1920                                           | 5.92355570 12                                                                  | 6.14556350-07                                              |
| 1920                                           | 1930                                           | 6.60741710 12                                                                  | 6.81944930-07                                              |
| 1930                                           | 1940                                           | 7.36112100 12                                                                  | 7.55808250-07                                              |
| 1940                                           | 1950                                           | 8.19082650 12                                                                  | 8.36675540-07                                              |
| 1950                                           | 1960                                           | 9.10314270 12                                                                  | 9.25111040-07                                              |
| 1960                                           | 1970                                           | 1.01051570 13                                                                  | 1.02171570-06                                              |
| 1970                                           | 1980                                           | 1.12044550 13                                                                  | 1.12712880-06                                              |
| 1980                                           | 1990                                           | 1.24091610 13                                                                  | 1.24202990-06                                              |
| 1990                                           | 2000                                           | 1.37279460 13                                                                  | 1.36714040-06                                              |
| 2000                                           | 2010                                           | 1.51700790 13                                                                  | 1.50322580-06                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

$T = 300^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 2.42384580 14                                                                | 2.34079180-05                                             |
| 2100                                   | 2200                                   | 5.90971290 14                                                                | 5.44452970-05                                             |
| 2200                                   | 2300                                   | 1.32128410 15                                                                | 1.16366810-04                                             |
| 2300                                   | 2400                                   | 2.73954430 15                                                                | 2.31088530-04                                             |
| 2400                                   | 2500                                   | 5.31744700 15                                                                | 4.30361520-04                                             |
| 2500                                   | 2600                                   | 9.73914270 15                                                                | 7.57504560-04                                             |
| 2600                                   | 2700                                   | 1.69457090 16                                                                | 1.26855900-03                                             |
| 2700                                   | 2800                                   | 2.81722450 16                                                                | 2.03265770-03                                             |
| 2800                                   | 2900                                   | 4.49732280 16                                                                | 3.13149880-03                                             |
| 2900                                   | 3000                                   | 6.92328400 16                                                                | 4.65791430-03                                             |
| 3000                                   | 3200                                   | 2.52415180 17                                                                | 1.61199300-02                                             |
| 3200                                   | 3400                                   | 4.99537760 17                                                                | 2.99893060-02                                             |
| 3400                                   | 3600                                   | 9.02625350 17                                                                | 5.11194280-02                                             |
| 3600                                   | 3800                                   | 1.51205300 18                                                                | 8.10392970-02                                             |
| 3800                                   | 4000                                   | 2.37692190 18                                                                | 1.20900050-01                                             |
| 4000                                   | 4200                                   | 3.54064860 18                                                                | 1.71353070-01                                             |
| 4200                                   | 4400                                   | 5.03738480 18                                                                | 2.32500520-01                                             |
| 4400                                   | 4600                                   | 6.88952600 18                                                                | 3.03911590-01                                             |
| 4600                                   | 4800                                   | 9.10709420 18                                                                | 3.84638520-01                                             |
| 4800                                   | 5000                                   | 1.16867780 19                                                                | 4.73563430-01                                             |
| 5000                                   | 5500                                   | 4.27196380 19                                                                | 1.61170650 00                                             |
| 5500                                   | 6000                                   | 6.55394050 19                                                                | 2.25990660 00                                             |
| 6000                                   | 6500                                   | 9.14008690 19                                                                | 2.90147560 00                                             |
| 6500                                   | 7000                                   | 1.18567020 20                                                                | 3.48665410 00                                             |
| 7000                                   | 7500                                   | 1.45449560 20                                                                | 3.98347890 00                                             |
| 7500                                   | 8000                                   | 1.70786370 20                                                                | 4.37651300 00                                             |
| 8000                                   | 8500                                   | 1.93693820 20                                                                | 4.66357490 00                                             |
| 8500                                   | 9000                                   | 2.13641940 20                                                                | 4.85049950 00                                             |
| 9000                                   | 9500                                   | 2.30392610 20                                                                | 4.94847960 00                                             |
| 9500                                   | 10000                                  | 2.43927740 20                                                                | 4.97082510 00                                             |
| 10000                                  | 11000                                  | 5.16368680 20                                                                | 9.77379280 00                                             |
| 11000                                  | 12000                                  | 5.36834590 20                                                                | 9.27937280 00                                             |
| 12000                                  | 13000                                  | 5.40447590 20                                                                | 8.59529130 00                                             |
| 13000                                  | 14000                                  | 5.31828320 20                                                                | 7.83198260 00                                             |
| 14000                                  | 15000                                  | 5.14881490 20                                                                | 7.05954170 00                                             |
| 15000                                  | 16000                                  | 4.92656730 20                                                                | 6.31895560 00                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 400^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 0.                                                                           | 1.26348680-13                                             |
| 810                                    | 820                                    | 0.                                                                           | 2.52697350-13                                             |
| 820                                    | 830                                    | 2.85923760 06                                                                | 3.47458860-13                                             |
| 830                                    | 840                                    | 2.85923760 06                                                                | 6.00156210-13                                             |
| 840                                    | 850                                    | 2.85923760 06                                                                | 8.84440730-13                                             |
| 850                                    | 860                                    | 5.71847520 06                                                                | 1.42142260-12                                             |
| 860                                    | 870                                    | 8.57771270 06                                                                | 2.14792750-12                                             |
| 870                                    | 880                                    | 1.42961880 07                                                                | 3.28506560-12                                             |
| 880                                    | 890                                    | 2.28739010 07                                                                | 4.92759840-12                                             |
| 890                                    | 900                                    | 3.43108510 07                                                                | 7.32822320-12                                             |
| 900                                    | 910                                    | 4.86070390 07                                                                | 1.08028120-11                                             |
| 910                                    | 920                                    | 7.14809390 07                                                                | 1.57935840-11                                             |
| 920                                    | 930                                    | 1.08651030 08                                                                | 2.28691100-11                                             |
| 930                                    | 940                                    | 1.54398930 08                                                                | 3.28506560-11                                             |
| 940                                    | 950                                    | 2.23020530 08                                                                | 4.67805970-11                                             |
| 950                                    | 960                                    | 3.17375370 08                                                                | 6.60803580-11                                             |
| 960                                    | 970                                    | 4.48900300 08                                                                | 9.27083410-11                                             |
| 970                                    | 980                                    | 6.34750740 08                                                                | 1.28970410-10                                             |
| 980                                    | 990                                    | 8.93504410 08                                                                | 1.78246390-10                                             |
| 990                                    | 1000                                   | 1.22375370 09                                                                | 2.44547860-10                                             |
| 1000                                   | 1010                                   | 1.68695020 09                                                                | 3.33276220-10                                             |
| 1010                                   | 1020                                   | 2.30454550 09                                                                | 4.51191120-10                                             |
| 1020                                   | 1030                                   | 3.13372440 09                                                                | 6.06979040-10                                             |
| 1030                                   | 1040                                   | 4.22595310 09                                                                | 8.11474370-10                                             |
| 1040                                   | 1050                                   | 5.67558660 09                                                                | 1.07835440-09                                             |
| 1050                                   | 1060                                   | 7.56554260 09                                                                | 1.42473930-09                                             |
| 1060                                   | 1070                                   | 1.00330650 10                                                                | 1.87163450-09                                             |
| 1070                                   | 1080                                   | 1.32354110 10                                                                | 2.44528910-09                                             |
| 1080                                   | 1090                                   | 1.73555720 10                                                                | 3.17763760-09                                             |
| 1090                                   | 1100                                   | 2.26423020 10                                                                | 4.10794290-09                                             |
| 1100                                   | 1110                                   | 2.93929620 10                                                                | 5.28380690-09                                             |
| 1110                                   | 1120                                   | 3.79592380 10                                                                | 6.76287610-09                                             |
| 1120                                   | 1130                                   | 4.87871710 10                                                                | 8.61470540-09                                             |
| 1130                                   | 1140                                   | 6.24057190 10                                                                | 1.09226540-08                                             |
| 1140                                   | 1150                                   | 7.94639310 10                                                                | 1.37863460-08                                             |
| 1150                                   | 1160                                   | 1.00725220 11                                                                | 1.73242990-08                                             |
| 1160                                   | 1170                                   | 1.27121700 11                                                                | 2.16769790-08                                             |
| 1170                                   | 1180                                   | 1.59759900 11                                                                | 2.70101570-08                                             |
| 1180                                   | 1190                                   | 1.99940770 11                                                                | 3.35187560-08                                             |
| 1190                                   | 1200                                   | 2.49225440 11                                                                | 4.14311840-08                                             |
| 1200                                   | 1210                                   | 3.09435270 11                                                                | 5.10139100-08                                             |
| 1210                                   | 1220                                   | 3.82723250 11                                                                | 6.25771190-08                                             |
| 1220                                   | 1230                                   | 4.71599790 11                                                                | 7.64800540-08                                             |
| 1230                                   | 1240                                   | 5.79007050 11                                                                | 9.31380210-08                                             |
| 1240                                   | 1250                                   | 7.08350380 11                                                                | 1.13029160-07                                             |
| 1250                                   | 1260                                   | 8.63586960 11                                                                | 1.36702320-07                                             |
| 1260                                   | 1270                                   | 1.04928870 12                                                                | 1.64785680-07                                             |
| 1270                                   | 1280                                   | 1.27072240 12                                                                | 1.97995830-07                                             |
| 1280                                   | 1290                                   | 1.53392950 12                                                                | 2.37148030-07                                             |
| 1290                                   | 1300                                   | 1.84583800 12                                                                | 2.83167160-07                                             |
| 1300                                   | 1310                                   | 2.21436230 12                                                                | 3.37099150-07                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

$T = 400^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 2.64849750 12                                                                  | 4.00124210-07                                              |
| 1320                                           | 1330                                           | 3.15847680 12                                                                  | 4.73570030-07                                              |
| 1330                                           | 1340                                           | 3.75589160 12                                                                  | 5.58926620-07                                              |
| 1340                                           | 1350                                           | 4.45391720 12                                                                  | 6.57861700-07                                              |
| 1350                                           | 1360                                           | 5.26702160 12                                                                  | 7.72237520-07                                              |
| 1360                                           | 1370                                           | 6.21207110 12                                                                  | 9.04128480-07                                              |
| 1370                                           | 1380                                           | 7.30757650 12                                                                  | 1.05583960-06                                              |
| 1380                                           | 1390                                           | 8.57434170 12                                                                  | 1.22992680-06                                              |
| 1390                                           | 1400                                           | 1.00355980 13                                                                  | 1.42921710-06                                              |
| 1400                                           | 1410                                           | 1.17172210 13                                                                  | 1.65683110-06                                              |
| 1410                                           | 1420                                           | 1.36479620 13                                                                  | 1.91620600-06                                              |
| 1420                                           | 1430                                           | 1.58597160 13                                                                  | 2.21111960-06                                              |
| 1430                                           | 1440                                           | 1.83877770 13                                                                  | 2.54571540-06                                              |
| 1440                                           | 1450                                           | 2.12711260 13                                                                  | 2.92452920-06                                              |
| 1450                                           | 1460                                           | 2.45527330 13                                                                  | 3.35251640-06                                              |
| 1460                                           | 1470                                           | 2.92798610 13                                                                  | 3.83508010-06                                              |
| 1470                                           | 1480                                           | 3.25044100 13                                                                  | 4.37810110-06                                              |
| 1480                                           | 1490                                           | 3.72932600 13                                                                  | 4.98796770-06                                              |
| 1490                                           | 1500                                           | 4.26786270 13                                                                  | 5.67160750-06                                              |
| 1500                                           | 1510                                           | 4.87584640 13                                                                  | 6.43651950-06                                              |
| 1510                                           | 1520                                           | 5.55968310 13                                                                  | 7.29080710-06                                              |
| 1520                                           | 1530                                           | 6.32743190 13                                                                  | 8.24321230-06                                              |
| 1530                                           | 1540                                           | 7.18784940 13                                                                  | 9.30315010-06                                              |
| 1540                                           | 1550                                           | 8.15043060 13                                                                  | 1.04807440-05                                              |
| 1550                                           | 1560                                           | 9.22545960 13                                                                  | 1.17868630-05                                              |
| 1560                                           | 1570                                           | 1.04240520 14                                                                  | 1.32331560-05                                              |
| 1570                                           | 1580                                           | 1.17582100 14                                                                  | 1.48320910-05                                              |
| 1580                                           | 1590                                           | 1.32408660 14                                                                  | 1.65969920-05                                              |
| 1590                                           | 1600                                           | 1.48859400 14                                                                  | 1.85420770-05                                              |
| 1600                                           | 1610                                           | 1.67083930 14                                                                  | 2.06824960-05                                              |
| 1610                                           | 1620                                           | 1.87242760 14                                                                  | 2.30343680-05                                              |
| 1620                                           | 1630                                           | 2.09507910 14                                                                  | 2.56148220-05                                              |
| 1630                                           | 1640                                           | 2.34063500 14                                                                  | 2.84420360-05                                              |
| 1640                                           | 1650                                           | 2.61106250 14                                                                  | 3.15352720-05                                              |
| 1650                                           | 1660                                           | 2.90846160 14                                                                  | 3.49149150-05                                              |
| 1660                                           | 1670                                           | 3.23507040 14                                                                  | 3.86025140-05                                              |
| 1670                                           | 1680                                           | 3.59327180 14                                                                  | 4.26208170-05                                              |
| 1680                                           | 1690                                           | 3.98559930 14                                                                  | 4.69938090-05                                              |
| 1690                                           | 1700                                           | 4.41474310 14                                                                  | 5.17467480-05                                              |
| 1700                                           | 1710                                           | 4.88355710 14                                                                  | 5.69062030-05                                              |
| 1710                                           | 1720                                           | 5.39506440 14                                                                  | 6.25000860-05                                              |
| 1720                                           | 1730                                           | 5.95246420 14                                                                  | 6.85576900-05                                              |
| 1730                                           | 1740                                           | 6.55913800 14                                                                  | 7.51097190-05                                              |
| 1740                                           | 1750                                           | 7.21865600 14                                                                  | 8.21883230-05                                              |
| 1750                                           | 1760                                           | 7.93478380 14                                                                  | 8.98271300-05                                              |
| 1760                                           | 1770                                           | 8.71148820 14                                                                  | 9.80612750-05                                              |
| 1770                                           | 1780                                           | 9.55294430 14                                                                  | 1.06927430-04                                              |
| 1780                                           | 1790                                           | 1.04635410 15                                                                  | 1.16463820-04                                              |
| 1790                                           | 1800                                           | 1.14478890 15                                                                  | 1.26710270-04                                              |
| 1800                                           | 1810                                           | 1.25108250 15                                                                  | 1.37708230-04                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 400^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 1.36574170 15                                                                | 1.49500770-04                                             |
| 1820                                   | 1830                                   | 1.48929760 15                                                                | 1.62132620-04                                             |
| 1830                                   | 1840                                   | 1.62230550 15                                                                | 1.75650200-04                                             |
| 1840                                   | 1850                                   | 1.76534590 15                                                                | 1.90101610-04                                             |
| 1850                                   | 1860                                   | 1.91902500 15                                                                | 2.05536680-04                                             |
| 1860                                   | 1870                                   | 2.08397510 15                                                                | 2.22006950-04                                             |
| 1870                                   | 1880                                   | 2.26085540 15                                                                | 2.39565720-04                                             |
| 1880                                   | 1890                                   | 2.45035260 15                                                                | 2.58268020-04                                             |
| 1890                                   | 1900                                   | 2.65318080 15                                                                | 2.78170650-04                                             |
| 1900                                   | 1910                                   | 2.87008290 15                                                                | 2.99332160-04                                             |
| 1910                                   | 1920                                   | 3.10183030 15                                                                | 3.21812870-04                                             |
| 1920                                   | 1930                                   | 3.34922370 15                                                                | 3.45674880-04                                             |
| 1930                                   | 1940                                   | 3.61309380 15                                                                | 3.70982050-04                                             |
| 1940                                   | 1950                                   | 3.89430120 15                                                                | 3.97800000-04                                             |
| 1950                                   | 1960                                   | 4.19373700 15                                                                | 4.26196130-04                                             |
| 1960                                   | 1970                                   | 4.51232340 15                                                                | 4.56239570-04                                             |
| 1970                                   | 1980                                   | 4.85101360 15                                                                | 4.88001200-04                                             |
| 1980                                   | 1990                                   | 5.21079270 15                                                                | 5.21553660-04                                             |
| 1990                                   | 2000                                   | 5.59267750 15                                                                | 5.56971260-04                                             |
| 2000                                   | 2010                                   | 5.99771700 15                                                                | 5.94330070-04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 400^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 8.25857150 16                                                                  | 7.98451300-03                                              |
| 2100                                           | 2200                                           | 1.53899680 17                                                                  | 1.41923910-02                                              |
| 2200                                           | 2300                                           | 2.69240050 17                                                                  | 2.37325480-02                                              |
| 2300                                           | 2400                                           | 4.45888430 17                                                                  | 3.76403930-02                                              |
| 2400                                           | 2500                                           | 7.03913170 17                                                                  | 5.70084880-02                                              |
| 2500                                           | 2600                                           | 1.06552090 18                                                                  | 8.29248230-02                                              |
| 2600                                           | 2700                                           | 1.55421180 18                                                                  | 1.16410340-01                                              |
| 2700                                           | 2800                                           | 2.19382170 18                                                                  | 1.58361890-01                                              |
| 2800                                           | 2900                                           | 3.00753600 18                                                                  | 2.09505240-01                                              |
| 2900                                           | 3000                                           | 4.01695320 18                                                                  | 2.70360920-01                                              |
| 3000                                           | 3200                                           | 1.19378000 19                                                                  | 7.63381000-01                                              |
| 3200                                           | 3400                                           | 1.87414900 19                                                                  | 1.12635920 00                                              |
| 3400                                           | 3600                                           | 2.75719770 19                                                                  | 1.56295290 00                                              |
| 3600                                           | 3800                                           | 3.84386720 19                                                                  | 2.06175100 00                                              |
| 3800                                           | 4000                                           | 5.12324020 19                                                                  | 2.60763340 00                                              |
| 4000                                           | 4200                                           | 6.57461020 19                                                                  | 3.18367900 00                                              |
| 4200                                           | 4400                                           | 8.17015450 19                                                                  | 3.77282100 00                                              |
| 4400                                           | 4600                                           | 9.87770370 19                                                                  | 4.35910360 00                                              |
| 4600                                           | 4800                                           | 1.16632680 20                                                                  | 4.92851520 00                                              |
| 4800                                           | 5000                                           | 1.34931270 20                                                                  | 5.46944060 00                                              |
| 5000                                           | 5500                                           | 4.17498450 20                                                                  | 1.57780460 01                                              |
| 5500                                           | 6000                                           | 5.26655800 20                                                                  | 1.81835770 01                                              |
| 6000                                           | 6500                                           | 6.23044180 20                                                                  | 1.97982510 01                                              |
| 6500                                           | 7000                                           | 7.02632160 20                                                                  | 2.06785950 01                                              |
| 7000                                           | 7500                                           | 7.64175180 20                                                                  | 2.09422290 01                                              |
| 7500                                           | 8000                                           | 8.08293350 20                                                                  | 2.07244010 01                                              |
| 8000                                           | 8500                                           | 8.36677700 20                                                                  | 2.01534480 01                                              |
| 8500                                           | 9000                                           | 8.51510760 20                                                                  | 1.93395630 01                                              |
| 9000                                           | 9500                                           | 8.55088540 20                                                                  | 1.83715550 01                                              |
| 9500                                           | 10000                                          | 8.49598280 20                                                                  | 1.73177890 01                                              |
| 10000                                          | 11000                                          | 1.65500680 21                                                                  | 3.13702980 01                                              |
| 11000                                          | 12000                                          | 1.56923620 21                                                                  | 2.71413140 01                                              |
| 12000                                          | 13000                                          | 1.46331980 21                                                                  | 2.32835180 01                                              |
| 13000                                          | 14000                                          | 1.35052670 21                                                                  | 1.98957910 01                                              |
| 14000                                          | 15000                                          | 1.23833610 21                                                                  | 1.69837230 01                                              |
| 15000                                          | 16000                                          | 1.13101960 21                                                                  | 1.45101440 01                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 0.                                                                           | 0.                                                        |
| 310                                    | 320                                    | 0.                                                                           | 0.                                                        |
| 320                                    | 330                                    | 0.                                                                           | 0.                                                        |
| 330                                    | 340                                    | 0.                                                                           | 0.                                                        |
| 340                                    | 350                                    | 0.                                                                           | 0.                                                        |
| 350                                    | 360                                    | 0.                                                                           | 0.                                                        |
| 360                                    | 370                                    | 0.                                                                           | 0.                                                        |
| 370                                    | 380                                    | 0.                                                                           | 0.                                                        |
| 380                                    | 390                                    | 0.                                                                           | 0.                                                        |
| 390                                    | 400                                    | 0.                                                                           | 0.                                                        |
| 400                                    | 410                                    | 0.                                                                           | 0.                                                        |
| 410                                    | 420                                    | 0.                                                                           | 0.                                                        |
| 420                                    | 430                                    | 0.                                                                           | 0.                                                        |
| 430                                    | 440                                    | 0.                                                                           | 0.                                                        |
| 440                                    | 450                                    | 0.                                                                           | 0.                                                        |
| 450                                    | 460                                    | 0.                                                                           | 0.                                                        |
| 460                                    | 470                                    | 0.                                                                           | 0.                                                        |
| 470                                    | 480                                    | 0.                                                                           | 0.                                                        |
| 480                                    | 490                                    | 0.                                                                           | 0.                                                        |
| 490                                    | 500                                    | 0.                                                                           | 0.                                                        |
| 500                                    | 510                                    | 0.                                                                           | 0.                                                        |
| 510                                    | 520                                    | 0.                                                                           | 0.                                                        |
| 520                                    | 530                                    | 0.                                                                           | 0.                                                        |
| 530                                    | 540                                    | 0.                                                                           | 0.                                                        |
| 540                                    | 550                                    | 0.                                                                           | 0.                                                        |
| 550                                    | 560                                    | 0.                                                                           | 0.                                                        |
| 560                                    | 570                                    | 0.                                                                           | 0.                                                        |
| 570                                    | 580                                    | 0.                                                                           | 0.                                                        |
| 580                                    | 590                                    | 0.                                                                           | 0.                                                        |
| 590                                    | 600                                    | 0.                                                                           | 0.                                                        |
| 600                                    | 610                                    | 0.                                                                           | 0.                                                        |
| 610                                    | 620                                    | 0.                                                                           | 7.71171120-14                                             |
| 620                                    | 630                                    | 0.                                                                           | 1.54234220-13                                             |
| 630                                    | 640                                    | 0.                                                                           | 2.31351340-13                                             |
| 640                                    | 650                                    | 0.                                                                           | 4.62702670-13                                             |
| 650                                    | 660                                    | 5.58444840 06                                                                | 8.48288230-13                                             |
| 660                                    | 670                                    | 0.                                                                           | 1.46522510-12                                             |
| 670                                    | 680                                    | 1.11688970 07                                                                | 2.62198180-12                                             |
| 680                                    | 690                                    | 1.67533450 07                                                                | 4.54990960-12                                             |
| 690                                    | 700                                    | 2.79222420 07                                                                | 7.78882830-12                                             |
| 700                                    | 710                                    | 4.46755870 07                                                                | 1.29556750-11                                             |
| 710                                    | 720                                    | 7.81822770 07                                                                | 2.13614400-11                                             |
| 720                                    | 730                                    | 1.22857860 08                                                                | 3.47027000-11                                             |
| 730                                    | 740                                    | 2.06624590 08                                                                | 5.56014380-11                                             |
| 740                                    | 750                                    | 3.29482460 08                                                                | 8.78363900-11                                             |
| 750                                    | 760                                    | 5.24938150 08                                                                | 1.37037110-10                                             |
| 760                                    | 770                                    | 8.09745020 08                                                                | 2.11069530-10                                             |
| 770                                    | 780                                    | 1.25650090 09                                                                | 3.21192770-10                                             |
| 780                                    | 790                                    | 1.90988140 09                                                                | 4.83292940-10                                             |
| 790                                    | 800                                    | 2.87599090 09                                                                | 7.19194180-10                                             |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

T = 500°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 800                                    | 810                                    | 4.29444080 09                                           | 1.05881790-09                               |
| 810                                    | 820                                    | 6.33276450 09                                           | 1.54303630-09                               |
| 820                                    | 830                                    | 9.24784650 09                                           | 2.22660240-09                               |
| 830                                    | 840                                    | 1.33803380 10                                           | 3.18246900-09                               |
| 840                                    | 850                                    | 1.91714110 10                                           | 4.50749520-09                               |
| 850                                    | 860                                    | 2.72409390 10                                           | 6.32799880-09                               |
| 860                                    | 870                                    | 3.83595760 10                                           | 8.80847070-09                               |
| 870                                    | 880                                    | 5.35716130 10                                           | 1.21508290-08                               |
| 880                                    | 890                                    | 7.42173190 10                                           | 1.66566790-08                               |
| 890                                    | 900                                    | 1.02016700 11                                           | 2.26406590-08                               |
| 900                                    | 910                                    | 1.39181210 11                                           | 3.05476300-08                               |
| 910                                    | 920                                    | 1.88508640 11                                           | 4.09225810-08                               |
| 920                                    | 930                                    | 2.53528370 11                                           | 5.44439100-08                               |
| 930                                    | 940                                    | 3.38680040 11                                           | 7.19505740-08                               |
| 940                                    | 950                                    | 4.49447580 11                                           | 9.44741690-08                               |
| 950                                    | 960                                    | 5.92666340 11                                           | 1.23275330-07                               |
| 960                                    | 970                                    | 7.76724170 11                                           | 1.59855980-07                               |
| 970                                    | 980                                    | 1.01187970 12                                           | 2.06157480-07                               |
| 980                                    | 990                                    | 1.31063090 12                                           | 2.64315200-07                               |
| 990                                    | 1000                                   | 1.68810060 12                                           | 3.37019900-07                               |
| 1000                                   | 1010                                   | 2.16249950 12                                           | 4.27438020-07                               |
| 1010                                   | 1020                                   | 2.75566280 12                                           | 5.39318830-07                               |
| 1020                                   | 1030                                   | 3.49361970 12                                           | 6.77030300-07                               |
| 1030                                   | 1040                                   | 4.40729130 12                                           | 8.45906540-07                               |
| 1040                                   | 1050                                   | 5.53321670 12                                           | 1.05185160-06                               |
| 1050                                   | 1060                                   | 6.91439040 12                                           | 1.30195730-06                               |
| 1060                                   | 1070                                   | 8.60120090 12                                           | 1.60437920-06                               |
| 1070                                   | 1080                                   | 1.06524530 13                                           | 1.96852500-06                               |
| 1080                                   | 1090                                   | 1.31365160 13                                           | 2.40520480-06                               |
| 1090                                   | 1100                                   | 1.61325330 13                                           | 2.92679320-06                               |
| 1100                                   | 1110                                   | 1.97318330 13                                           | 3.54740320-06                               |
| 1110                                   | 1120                                   | 2.40393690 13                                           | 4.28307300-06                               |
| 1120                                   | 1130                                   | 2.91753870 13                                           | 5.15196600-06                               |
| 1130                                   | 1140                                   | 3.52770950 13                                           | 6.17458240-06                               |
| 1140                                   | 1150                                   | 4.25006400 13                                           | 7.37398430-06                               |
| 1150                                   | 1160                                   | 5.10230550 13                                           | 8.77603330-06                               |
| 1160                                   | 1170                                   | 6.10444820 13                                           | 1.04096400-05                               |
| 1170                                   | 1180                                   | 7.27904420 13                                           | 1.23070280-05                               |
| 1180                                   | 1190                                   | 8.65143580 13                                           | 1.45040040-05                               |
| 1190                                   | 1200                                   | 1.02500120 14                                           | 1.70402470-05                               |
| 1200                                   | 1210                                   | 1.21064890 14                                           | 1.99596030-05                               |
| 1210                                   | 1220                                   | 1.42562040 14                                           | 2.33103920-05                               |
| 1220                                   | 1230                                   | 1.67384130 14                                           | 2.71457220-05                               |
| 1230                                   | 1240                                   | 1.95966300 14                                           | 3.15238170-05                               |
| 1240                                   | 1250                                   | 2.28789470 14                                           | 3.65083470-05                               |
| 1250                                   | 1260                                   | 2.66383970 14                                           | 4.21687710-05                               |
| 1260                                   | 1270                                   | 3.09333140 14                                           | 4.85806770-05                               |
| 1270                                   | 1280                                   | 3.58277160 14                                           | 5.58261400-05                               |
| 1280                                   | 1290                                   | 4.13916950 14                                           | 6.39940700-05                               |
| 1290                                   | 1300                                   | 4.77018220 14                                           | 7.31805730-05                               |
| 1300                                   | 1310                                   | 5.48415630 14                                           | 8.34893050-05                               |

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

T = 500°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 1310                                   | 1320                                   | 6.29017080 14                                           | 9.50318370-05                               |
| 1320                                   | 1330                                   | 7.19808080 14                                           | 1.07928000-04                               |
| 1330                                   | 1340                                   | 8.21856180 14                                           | 1.22306270-04                               |
| 1340                                   | 1350                                   | 9.36315550 14                                           | 1.38304060-04                               |
| 1350                                   | 1360                                   | 1.06443160 15                                           | 1.56068120-04                               |
| 1360                                   | 1370                                   | 1.20754550 15                                           | 1.75754870-04                               |
| 1370                                   | 1380                                   | 1.36709920 15                                           | 1.97530700-04                               |
| 1380                                   | 1390                                   | 1.54463980 15                                           | 2.21572300-04                               |
| 1390                                   | 1400                                   | 1.74182490 15                                           | 2.48066990-04                               |
| 1400                                   | 1410                                   | 1.96042640 15                                           | 2.77213010-04                               |
| 1410                                   | 1420                                   | 2.20233650 15                                           | 3.09219790-04                               |
| 1420                                   | 1430                                   | 2.46957130 15                                           | 3.44308220-04                               |
| 1430                                   | 1440                                   | 2.76427650 15                                           | 3.82710940-04                               |
| 1440                                   | 1450                                   | 3.08873110 15                                           | 4.24672530-04                               |
| 1450                                   | 1460                                   | 3.44555310 15                                           | 4.70449750-04                               |
| 1460                                   | 1470                                   | 3.83670290 15                                           | 5.20311740-04                               |
| 1470                                   | 1480                                   | 4.26548880 15                                           | 5.74540190-04                               |
| 1480                                   | 1490                                   | 4.73457050 15                                           | 6.33429530-04                               |
| 1490                                   | 1500                                   | 5.24696380 15                                           | 6.97287000-04                               |
| 1500                                   | 1510                                   | 5.80584460 15                                           | 7.66432840-04                               |
| 1510                                   | 1520                                   | 6.41455260 15                                           | 8.41200320-04                               |
| 1520                                   | 1530                                   | 7.07659550 15                                           | 9.21935850-04                               |
| 1530                                   | 1540                                   | 7.79565230 15                                           | 1.00879900-03                               |
| 1540                                   | 1550                                   | 8.57557700 15                                           | 1.10276250-03                               |
| 1550                                   | 1560                                   | 9.42040160 15                                           | 1.20361220-03                               |
| 1560                                   | 1570                                   | 1.03343390 16                                           | 1.31194720-03                               |
| 1570                                   | 1580                                   | 1.13217870 16                                           | 1.42817950-03                               |
| 1580                                   | 1590                                   | 1.23873280 16                                           | 1.55273440-03                               |
| 1590                                   | 1600                                   | 1.35357350 16                                           | 1.68604960-03                               |
| 1600                                   | 1610                                   | 1.47719720 16                                           | 1.82857610-03                               |
| 1610                                   | 1620                                   | 1.61011950 16                                           | 1.98077690-03                               |
| 1620                                   | 1630                                   | 1.75287550 16                                           | 2.14312770-03                               |
| 1630                                   | 1640                                   | 1.90601990 16                                           | 2.31611640-03                               |
| 1640                                   | 1650                                   | 2.07012710 16                                           | 2.50024270-03                               |
| 1650                                   | 1660                                   | 2.24579120 16                                           | 2.69601790-03                               |
| 1660                                   | 1670                                   | 2.43362620 16                                           | 2.90396490-03                               |
| 1670                                   | 1680                                   | 2.63426580 16                                           | 3.12461730-03                               |
| 1680                                   | 1690                                   | 2.84836380 16                                           | 3.35851990-03                               |
| 1690                                   | 1700                                   | 3.07659360 16                                           | 3.60622730-03                               |
| 1700                                   | 1710                                   | 3.31964840 16                                           | 3.86830470-03                               |
| 1710                                   | 1720                                   | 3.57824090 16                                           | 4.14532630-03                               |
| 1720                                   | 1730                                   | 3.85310370 16                                           | 4.43787580-03                               |
| 1730                                   | 1740                                   | 4.14498830 16                                           | 4.74654560-03                               |
| 1740                                   | 1750                                   | 4.45466580 16                                           | 5.07193640-03                               |
| 1750                                   | 1760                                   | 4.78292600 16                                           | 5.41465640-03                               |
| 1760                                   | 1770                                   | 5.13057760 16                                           | 5.77532160-03                               |
| 1770                                   | 1780                                   | 5.49844760 16                                           | 6.15455440-03                               |
| 1780                                   | 1790                                   | 5.88738150 16                                           | 6.55298370-03                               |
| 1790                                   | 1800                                   | 6.29824230 16                                           | 6.97124400-03                               |
| 1800                                   | 1810                                   | 6.73191080 16                                           | 7.40997510-03                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 7.18928470 16                                                                  | 7.86982160-03                                              |
| 1820                                           | 1830                                           | 7.67127860 16                                                                  | 8.35143190-03                                              |
| 1830                                           | 1840                                           | 8.17882330 16                                                                  | 8.85545810-03                                              |
| 1840                                           | 1850                                           | 8.71286550 16                                                                  | 9.38255530-03                                              |
| 1850                                           | 1860                                           | 9.27436740 16                                                                  | 9.93338080-03                                              |
| 1860                                           | 1870                                           | 9.86430590 16                                                                  | 1.05085940-02                                              |
| 1870                                           | 1880                                           | 1.04836720 17                                                                  | 1.11088540-02                                              |
| 1880                                           | 1890                                           | 1.11334720 17                                                                  | 1.17348240-02                                              |
| 1890                                           | 1900                                           | 1.18147240 17                                                                  | 1.23871630-02                                              |
| 1900                                           | 1910                                           | 1.25284580 17                                                                  | 1.30665310-02                                              |
| 1910                                           | 1920                                           | 1.32757180 17                                                                  | 1.37735890-02                                              |
| 1920                                           | 1930                                           | 1.40575600 17                                                                  | 1.45089920-02                                              |
| 1930                                           | 1940                                           | 1.48750470 17                                                                  | 1.52733960-02                                              |
| 1940                                           | 1950                                           | 1.57292580 17                                                                  | 1.60674520-02                                              |
| 1950                                           | 1960                                           | 1.66212750 17                                                                  | 1.68918080-02                                              |
| 1960                                           | 1970                                           | 1.75521950 17                                                                  | 1.77471090-02                                              |
| 1970                                           | 1980                                           | 1.85231200 17                                                                  | 1.86339920-02                                              |
| 1980                                           | 1990                                           | 1.95351580 17                                                                  | 1.95530930-02                                              |
| 1990                                           | 2000                                           | 2.05894280 17                                                                  | 2.05050380-02                                              |
| 2000                                           | 2010                                           | 2.16870520 17                                                                  | 2.14904490-02                                              |

R.K.H. Gehel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 2.73978440 18                                                                | 2.65067370-01                                             |
| 2100                                   | 2200                                   | 4.34291080 18                                                                | 4.00734440-01                                             |
| 2200                                   | 2300                                   | 6.55513140 18                                                                | 5.78111720-01                                             |
| 2300                                   | 2400                                   | 9.48335220 18                                                                | 8.00918550-01                                             |
| 2400                                   | 2500                                   | 1.32219400 19                                                                | 1.07125070 00                                             |
| 2500                                   | 2600                                   | 1.78474170 19                                                                | 1.38948490 00                                             |
| 2600                                   | 2700                                   | 2.34147420 19                                                                | 1.75432400 00                                             |
| 2700                                   | 2800                                   | 2.99552720 19                                                                | 2.16295350 00                                             |
| 2800                                   | 2900                                   | 3.74752780 19                                                                | 2.61127420 00                                             |
| 2900                                   | 3000                                   | 4.59618110 19                                                                | 3.09417810 00                                             |
| 3000                                   | 3200                                   | 1.21033360 20                                                                | 7.74582550 00                                             |
| 3200                                   | 3400                                   | 1.65285530 20                                                                | 9.94019500 00                                             |
| 3400                                   | 3600                                   | 2.14880370 20                                                                | 1.21875370 01                                             |
| 3600                                   | 3800                                   | 2.68262540 20                                                                | 1.43956830 01                                             |
| 3800                                   | 4000                                   | 3.23814980 20                                                                | 1.64882040 01                                             |
| 4000                                   | 4200                                   | 3.79976020 20                                                                | 1.84072370 01                                             |
| 4200                                   | 4400                                   | 4.35430630 20                                                                | 2.01133840 01                                             |
| 4400                                   | 4600                                   | 4.88960780 20                                                                | 2.15838430 01                                             |
| 4600                                   | 4800                                   | 5.39663830 20                                                                | 2.28096560 01                                             |
| 4800                                   | 5000                                   | 5.86848250 20                                                                | 2.37927060 01                                             |
| 5000                                   | 5500                                   | 1.64663450 21                                                                | 6.22929390 01                                             |
| 5500                                   | 6000                                   | 1.84825850 21                                                                | 6.38632670 01                                             |
| 6000                                   | 6500                                   | 1.98314510 21                                                                | 6.30554210 01                                             |
| 6500                                   | 7000                                   | 2.05909920 21                                                                | 6.06282460 01                                             |
| 7000                                   | 7500                                   | 2.08665070 21                                                                | 5.72062500 01                                             |
| 7500                                   | 8000                                   | 2.07651250 21                                                                | 5.32574360 01                                             |
| 8000                                   | 8500                                   | 2.03832110 21                                                                | 4.91103000 01                                             |
| 8500                                   | 9000                                   | 1.98016340 21                                                                | 4.49829360 01                                             |
| 9000                                   | 9500                                   | 1.90852630 21                                                                | 4.10117700 01                                             |
| 9500                                   | 10000                                  | 1.82844800 21                                                                | 3.72756470 01                                             |
| 10000                                  | 11000                                  | 3.40097120 21                                                                | 6.44555960 01                                             |
| 11000                                  | 12000                                  | 3.05729190 21                                                                | 5.28967620 01                                             |
| 12000                                  | 13000                                  | 2.73009590 21                                                                | 4.34511450 01                                             |
| 13000                                  | 14000                                  | 2.43029070 21                                                                | 3.58100440 01                                             |
| 14000                                  | 15000                                  | 2.16146480 21                                                                | 2.96491730 01                                             |
| 15000                                  | 16000                                  | 1.92328670 21                                                                | 2.46788240 01                                             |

R.K.H. Gebel. Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 1000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 300                                            | 310                                            | 0.                                                                             | 1.23387380-12                                              |
| 310                                            | 320                                            | 0.                                                                             | 6.16936890-12                                              |
| 320                                            | 330                                            | 4.46755870 07                                                                  | 2.09758540-11                                              |
| 330                                            | 340                                            | 9.93511740 07                                                                  | 6.53953110-11                                              |
| 340                                            | 350                                            | 3.57404700 08                                                                  | 1.97419810-10                                              |
| 350                                            | 360                                            | 9.82862920 08                                                                  | 5.49073840-10                                              |
| 360                                            | 370                                            | 2.63585960 09                                                                  | 1.44486620-09                                              |
| 370                                            | 380                                            | 6.83536480 09                                                                  | 3.59797600-09                                              |
| 380                                            | 390                                            | 1.65299670 10                                                                  | 8.51619690-09                                              |
| 390                                            | 400                                            | 3.92869780 10                                                                  | 1.92397940-08                                              |
| 400                                            | 410                                            | 8.50176420 10                                                                  | 4.16296680-08                                              |
| 410                                            | 420                                            | 1.81025480 11                                                                  | 8.65451410-08                                              |
| 420                                            | 430                                            | 3.71298800 11                                                                  | 1.73367900-07                                              |
| 430                                            | 440                                            | 7.35449520 11                                                                  | 3.35508790-07                                              |
| 440                                            | 450                                            | 1.40987220 12                                                                  | 6.28757410-07                                              |
| 450                                            | 460                                            | 2.62151880 12                                                                  | 1.14352340-06                                              |
| 460                                            | 470                                            | 4.73766730 12                                                                  | 2.02231170-06                                              |
| 470                                            | 480                                            | 8.33691130 12                                                                  | 3.48399190-06                                              |
| 480                                            | 490                                            | 1.43088310 13                                                                  | 5.85669550-06                                              |
| 490                                            | 500                                            | 2.39898520 13                                                                  | 9.62136160-06                                              |
| 500                                            | 510                                            | 3.93452980 13                                                                  | 1.54681100-05                                              |
| 510                                            | 520                                            | 6.32072890 13                                                                  | 2.43677890-05                                              |
| 520                                            | 530                                            | 9.95808560 13                                                                  | 3.76609440-05                                              |
| 530                                            | 540                                            | 1.54029230 14                                                                  | 5.71664670-05                                              |
| 540                                            | 550                                            | 2.34152390 14                                                                  | 8.53119680-05                                              |
| 550                                            | 560                                            | 3.50169620 14                                                                  | 1.25287620-04                                              |
| 560                                            | 570                                            | 5.15619850 14                                                                  | 1.81224770-04                                              |
| 570                                            | 580                                            | 7.48189560 14                                                                  | 2.58400280-04                                              |
| 580                                            | 590                                            | 1.07067940 15                                                                  | 3.63466700-04                                              |
| 590                                            | 600                                            | 1.51211580 15                                                                  | 5.04708020-04                                              |
| 600                                            | 610                                            | 2.10901550 15                                                                  | 6.92319930-04                                              |
| 610                                            | 620                                            | 2.90680350 15                                                                  | 9.38712620-04                                              |
| 620                                            | 630                                            | 3.96138760 15                                                                  | 1.25883390-03                                              |
| 630                                            | 640                                            | 5.34088240 15                                                                  | 1.67050910-03                                              |
| 640                                            | 650                                            | 7.12748130 15                                                                  | 2.19479430-03                                              |
| 650                                            | 660                                            | 9.41946170 15                                                                  | 2.85633830-03                                              |
| 660                                            | 670                                            | 1.23333140 16                                                                  | 3.68374830-03                                              |
| 670                                            | 680                                            | 1.60059770 16                                                                  | 4.70995490-03                                              |
| 680                                            | 690                                            | 2.05971570 16                                                                  | 5.97256910-03                                              |
| 690                                            | 700                                            | 2.62917180 16                                                                  | 7.51422860-03                                              |
| 700                                            | 710                                            | 3.33021030 16                                                                  | 9.38292480-03                                              |
| 710                                            | 720                                            | 4.18707820 16                                                                  | 1.16323070-02                                              |
| 720                                            | 730                                            | 5.22726730 16                                                                  | 1.43219560-02                                              |
| 730                                            | 740                                            | 6.48175340 16                                                                  | 1.75176310-02                                              |
| 740                                            | 750                                            | 7.98522750 16                                                                  | 2.12914640-02                                              |
| 750                                            | 760                                            | 9.77631770 16                                                                  | 2.57221310-02                                              |
| 760                                            | 770                                            | 1.18977980 17                                                                  | 3.08949570-02                                              |
| 770                                            | 780                                            | 1.43967830 17                                                                  | 3.69019940-02                                              |
| 780                                            | 790                                            | 1.73249000 17                                                                  | 4.38420270-02                                              |
| 790                                            | 800                                            | 2.07384500 17                                                                  | 5.18205440-02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 2.46985330 17                                                                | 6.09496470-02                                             |
| 810                                    | 820                                    | 2.92711640 17                                                                | 7.13479060-02                                             |
| 820                                    | 830                                    | 3.45273470 17                                                                | 8.31401700-02                                             |
| 830                                    | 840                                    | 4.05431360 17                                                                | 9.64573150-02                                             |
| 840                                    | 850                                    | 4.73496600 17                                                                | 1.11435960-01                                             |
| 850                                    | 860                                    | 5.51831140 17                                                                | 1.28218090-01                                             |
| 860                                    | 870                                    | 6.39847360 17                                                                | 1.46950740-01                                             |
| 870                                    | 880                                    | 7.39007340 17                                                                | 1.67745480-01                                             |
| 880                                    | 890                                    | 8.50322020 17                                                                | 1.90878020-01                                             |
| 890                                    | 900                                    | 9.74849910 17                                                                | 2.16387640-01                                             |
| 900                                    | 910                                    | 1.11369560 18                                                                | 2.44476750-01                                             |
| 910                                    | 920                                    | 1.26800810 18                                                                | 2.75310240-01                                             |
| 920                                    | 930                                    | 1.43897860 18                                                                | 3.09054980-01                                             |
| 930                                    | 940                                    | 1.62783830 18                                                                | 3.45879170-01                                             |
| 940                                    | 950                                    | 1.83585570 18                                                                | 3.85951790-01                                             |
| 950                                    | 960                                    | 2.06433410 18                                                                | 4.29441920-01                                             |
| 960                                    | 970                                    | 2.31460860 18                                                                | 4.76518200-01                                             |
| 970                                    | 980                                    | 2.58804260 18                                                                | 5.27348160-01                                             |
| 980                                    | 990                                    | 2.88602520 18                                                                | 5.82097610-01                                             |
| 990                                    | 1000                                   | 3.20996690 18                                                                | 6.40930090-01                                             |
| 1000                                   | 1010                                   | 3.56129680 18                                                                | 7.04006220-01                                             |
| 1010                                   | 1020                                   | 3.94145850 18                                                                | 7.71483160-01                                             |
| 1020                                   | 1030                                   | 4.35190650 18                                                                | 8.43514050-01                                             |
| 1030                                   | 1040                                   | 4.79410240 18                                                                | 9.20247490-01                                             |
| 1040                                   | 1050                                   | 5.26951100 18                                                                | 1.00182700 00                                             |
| 1050                                   | 1060                                   | 5.77959690 18                                                                | 1.08839060 00                                             |
| 1060                                   | 1070                                   | 6.32581990 18                                                                | 1.18007010 00                                             |
| 1070                                   | 1080                                   | 6.90963170 18                                                                | 1.27699130 00                                             |
| 1080                                   | 1090                                   | 7.53247230 18                                                                | 1.37927280 00                                             |
| 1090                                   | 1100                                   | 8.19576580 18                                                                | 1.48702620 00                                             |
| 1100                                   | 1110                                   | 8.90091710 18                                                                | 1.60035550 00                                             |
| 1110                                   | 1120                                   | 9.64930820 18                                                                | 1.71935700 00                                             |
| 1120                                   | 1130                                   | 1.04422950 19                                                                | 1.84411890 00                                             |
| 1130                                   | 1140                                   | 1.12812030 19                                                                | 1.97472110 00                                             |
| 1140                                   | 1150                                   | 1.21673270 19                                                                | 2.11123500 00                                             |
| 1150                                   | 1160                                   | 1.31019240 19                                                                | 2.25372350 00                                             |
| 1160                                   | 1170                                   | 1.40862130 19                                                                | 2.40224050 00                                             |
| 1170                                   | 1180                                   | 1.51213700 19                                                                | 2.55683120 00                                             |
| 1180                                   | 1190                                   | 1.62085310 19                                                                | 2.71753190 00                                             |
| 1190                                   | 1200                                   | 1.73487800 19                                                                | 2.88436990 00                                             |
| 1200                                   | 1210                                   | 1.85431560 19                                                                | 3.05736350 00                                             |
| 1210                                   | 1220                                   | 1.97926470 19                                                                | 3.23652220 00                                             |
| 1220                                   | 1230                                   | 2.10981870 19                                                                | 3.42184660 00                                             |
| 1230                                   | 1240                                   | 2.24606550 19                                                                | 3.61332840 00                                             |
| 1240                                   | 1250                                   | 2.38808750 19                                                                | 3.81095070 00                                             |
| 1250                                   | 1260                                   | 2.53596140 19                                                                | 4.01468810 00                                             |
| 1260                                   | 1270                                   | 2.68975780 19                                                                | 4.22450670 00                                             |
| 1270                                   | 1280                                   | 2.84954170 19                                                                | 4.44036430 00                                             |
| 1280                                   | 1290                                   | 3.01537180 19                                                                | 4.66221090 00                                             |
| 1290                                   | 1300                                   | 3.18730060 19                                                                | 4.88998840 00                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 1000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1300                                           | 1310                                           | 3.36537460 19                                                                  | 5.12363110 00                                              |
| 1310                                           | 1320                                           | 3.54963400 19                                                                  | 5.36306610 00                                              |
| 1320                                           | 1330                                           | 3.74011290 19                                                                  | 5.60821310 00                                              |
| 1330                                           | 1340                                           | 3.93683890 19                                                                  | 5.85898520 00                                              |
| 1340                                           | 1350                                           | 4.13983360 19                                                                  | 6.11528860 00                                              |
| 1350                                           | 1360                                           | 4.34911220 19                                                                  | 6.37702320 00                                              |
| 1360                                           | 1370                                           | 4.56468390 19                                                                  | 6.64408310 00                                              |
| 1370                                           | 1380                                           | 4.78655170 19                                                                  | 6.91635630 00                                              |
| 1380                                           | 1390                                           | 5.01471250 19                                                                  | 7.19372550 00                                              |
| 1390                                           | 1400                                           | 5.24915730 19                                                                  | 7.47606820 00                                              |
| 1400                                           | 1410                                           | 5.48387100 19                                                                  | 7.76325700 00                                              |
| 1410                                           | 1420                                           | 5.73683280 19                                                                  | 8.05515990 00                                              |
| 1420                                           | 1430                                           | 5.99001610 19                                                                  | 8.35164070 00                                              |
| 1430                                           | 1440                                           | 6.24938890 19                                                                  | 8.65255910 00                                              |
| 1440                                           | 1450                                           | 6.51491350 19                                                                  | 8.95777130 00                                              |
| 1450                                           | 1460                                           | 6.78654690 19                                                                  | 9.26713010 00                                              |
| 1460                                           | 1470                                           | 7.06424080 19                                                                  | 9.58048500 00                                              |
| 1470                                           | 1480                                           | 7.34794180 19                                                                  | 9.89768290 00                                              |
| 1480                                           | 1490                                           | 7.63759180 19                                                                  | 1.02185680 01                                              |
| 1490                                           | 1500                                           | 7.93312760 19                                                                  | 1.05429830 01                                              |
| 1500                                           | 1510                                           | 8.23448140 19                                                                  | 1.08707680 01                                              |
| 1510                                           | 1520                                           | 8.54158110 19                                                                  | 1.12017610 01                                              |
| 1520                                           | 1530                                           | 8.85435000 19                                                                  | 1.15357990 01                                              |
| 1530                                           | 1540                                           | 9.17270750 19                                                                  | 1.18727190 01                                              |
| 1540                                           | 1550                                           | 9.49656880 19                                                                  | 1.22123560 01                                              |
| 1550                                           | 1560                                           | 9.82584550 19                                                                  | 1.25545440 01                                              |
| 1560                                           | 1570                                           | 1.01604450 20                                                                  | 1.28991160 01                                              |
| 1570                                           | 1580                                           | 1.05002720 20                                                                  | 1.32459080 01                                              |
| 1580                                           | 1590                                           | 1.08452280 20                                                                  | 1.35947520 01                                              |
| 1590                                           | 1600                                           | 1.11952100 20                                                                  | 1.39454840 01                                              |
| 1600                                           | 1610                                           | 1.15501130 20                                                                  | 1.42979370 01                                              |
| 1610                                           | 1620                                           | 1.19098300 20                                                                  | 1.46519470 01                                              |
| 1620                                           | 1630                                           | 1.22742490 20                                                                  | 1.50073510 01                                              |
| 1630                                           | 1640                                           | 1.26432580 20                                                                  | 1.53639840 01                                              |
| 1640                                           | 1650                                           | 1.30167410 20                                                                  | 1.57216860 01                                              |
| 1650                                           | 1660                                           | 1.33945810 20                                                                  | 1.60802950 01                                              |
| 1660                                           | 1670                                           | 1.37766600 20                                                                  | 1.64396550 01                                              |
| 1670                                           | 1680                                           | 1.41628540 20                                                                  | 1.67996060 01                                              |
| 1680                                           | 1690                                           | 1.45530420 20                                                                  | 1.71599940 01                                              |
| 1690                                           | 1700                                           | 1.49471000 20                                                                  | 1.75206650 01                                              |
| 1700                                           | 1710                                           | 1.53449010 20                                                                  | 1.78814690 01                                              |
| 1710                                           | 1720                                           | 1.57463190 20                                                                  | 1.82422550 01                                              |
| 1720                                           | 1730                                           | 1.61512260 20                                                                  | 1.86028760 01                                              |
| 1730                                           | 1740                                           | 1.65594940 20                                                                  | 1.89631890 01                                              |
| 1740                                           | 1750                                           | 1.69709920 20                                                                  | 1.93230500 01                                              |
| 1750                                           | 1760                                           | 1.73855900 20                                                                  | 1.96823210 01                                              |
| 1760                                           | 1770                                           | 1.78031590 20                                                                  | 2.00408640 01                                              |
| 1770                                           | 1780                                           | 1.82235660 20                                                                  | 2.03985450 01                                              |
| 1780                                           | 1790                                           | 1.86466810 20                                                                  | 2.07552320 01                                              |
| 1790                                           | 1800                                           | 1.90723730 20                                                                  | 2.11107970 01                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1800                                           | 1810                                           | 1.95005090 20                                                                  | 2.14651140 01                                              |
| 1810                                           | 1820                                           | 1.99309600 20                                                                  | 2.18100600 01                                              |
| 1820                                           | 1830                                           | 2.03635930 20                                                                  | 2.21695140 01                                              |
| 1830                                           | 1840                                           | 2.07982790 20                                                                  | 2.25193600 01                                              |
| 1840                                           | 1850                                           | 2.12348880 20                                                                  | 2.28674840 01                                              |
| 1850                                           | 1860                                           | 2.16732880 20                                                                  | 2.32137740 01                                              |
| 1860                                           | 1870                                           | 2.21133530 20                                                                  | 2.35581230 01                                              |
| 1870                                           | 1880                                           | 2.25549530 20                                                                  | 2.39004260 01                                              |
| 1880                                           | 1890                                           | 2.29979600 20                                                                  | 2.42405820 01                                              |
| 1890                                           | 1900                                           | 2.34422500 20                                                                  | 2.45784910 01                                              |
| 1900                                           | 1910                                           | 2.38876940 20                                                                  | 2.49140570 01                                              |
| 1910                                           | 1920                                           | 2.43341710 20                                                                  | 2.52471900 01                                              |
| 1920                                           | 1930                                           | 2.47815550 20                                                                  | 2.55777980 01                                              |
| 1930                                           | 1940                                           | 2.52297240 20                                                                  | 2.59057960 01                                              |
| 1940                                           | 1950                                           | 2.56785590 20                                                                  | 2.62311000 01                                              |
| 1950                                           | 1960                                           | 2.61279380 20                                                                  | 2.65536300 01                                              |
| 1960                                           | 1970                                           | 2.65777440 20                                                                  | 2.68733090 01                                              |
| 1970                                           | 1980                                           | 2.70278610 20                                                                  | 2.71900620 01                                              |
| 1980                                           | 1990                                           | 2.74781720 20                                                                  | 2.75038190 01                                              |
| 1990                                           | 2000                                           | 2.79285630 20                                                                  | 2.78145110 01                                              |
| 2000                                           | 2010                                           | 2.83789230 20                                                                  | 2.81220730 01                                              |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 3.03996820 21                                                                | 2.34515790 02                                             |
| 2100                                   | 2200                                   | 3.48344510 21                                                                | 3.21614140 02                                             |
| 2200                                   | 2300                                   | 3.91168620 21                                                                | 3.45341490 02                                             |
| 2300                                   | 2400                                   | 4.31731060 21                                                                | 3.64954490 02                                             |
| 2400                                   | 2500                                   | 4.69478600 21                                                                | 3.80683300 02                                             |
| 2500                                   | 2600                                   | 5.04027930 21                                                                | 3.92695870 02                                             |
| 2600                                   | 2700                                   | 5.35144430 21                                                                | 4.01207920 02                                             |
| 2700                                   | 2800                                   | 5.62718320 21                                                                | 4.06549690 02                                             |
| 2800                                   | 2900                                   | 5.86740970 21                                                                | 4.09039900 02                                             |
| 2900                                   | 3000                                   | 6.07282750 21                                                                | 4.09015920 02                                             |
| 3000                                   | 3200                                   | 1.26295840 22                                                                | 8.09546920 02                                             |
| 3200                                   | 3400                                   | 1.30730890 22                                                                | 7.97244060 02                                             |
| 3400                                   | 3600                                   | 1.33048560 22                                                                | 7.55451690 02                                             |
| 3600                                   | 3800                                   | 1.33607580 22                                                                | 7.17638870 02                                             |
| 3800                                   | 4000                                   | 1.32749730 22                                                                | 6.76476120 02                                             |
| 4000                                   | 4200                                   | 1.30781910 22                                                                | 6.33943520 02                                             |
| 4200                                   | 4400                                   | 1.27969150 22                                                                | 5.91458750 02                                             |
| 4400                                   | 4600                                   | 1.24533960 22                                                                | 5.49999310 02                                             |
| 4600                                   | 4800                                   | 1.20659200 22                                                                | 5.10208270 02                                             |
| 4800                                   | 5000                                   | 1.15432490 22                                                                | 4.72480710 02                                             |
| 5000                                   | 5500                                   | 2.72077700 22                                                                | 1.03128950 03                                             |
| 5500                                   | 6000                                   | 2.44583350 22                                                                | 8.46348200 02                                             |
| 6000                                   | 6500                                   | 2.18407670 22                                                                | 6.95218320 02                                             |
| 6500                                   | 7000                                   | 1.94423250 22                                                                | 5.72960700 02                                             |
| 7000                                   | 7500                                   | 1.72917180 22                                                                | 4.74386770 02                                             |
| 7500                                   | 8000                                   | 1.53870930 22                                                                | 3.94861190 02                                             |
| 8000                                   | 8500                                   | 1.37118990 22                                                                | 3.30518050 02                                             |
| 8500                                   | 9000                                   | 1.22435930 22                                                                | 2.78239440 02                                             |
| 9000                                   | 9500                                   | 1.09582560 22                                                                | 2.35552010 02                                             |
| 9500                                   | 10000                                  | 9.83239980 21                                                                | 2.00511180 02                                             |
| 10000                                  | 11000                                  | 1.68269830 22                                                                | 3.19171090 02                                             |
| 11000                                  | 12000                                  | 1.37647410 22                                                                | 2.38301620 02                                             |
| 12000                                  | 13000                                  | 1.13771840 22                                                                | 1.81159460 02                                             |
| 13000                                  | 14000                                  | 9.49632950 21                                                                | 1.39978090 02                                             |
| 14000                                  | 15000                                  | 7.99902290 21                                                                | 1.09755460 02                                             |
| 15000                                  | 16000                                  | 6.79483150 21                                                                | 9.72040960 01                                             |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

T = 1500°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 300                                    | 310                                    | 1.56928920 13                                           | 1.01990440-05                               |
| 310                                    | 320                                    | 3.72814370 13                                           | 2.34657060-05                               |
| 320                                    | 330                                    | 8.36793400 13                                           | 5.10590520-05                               |
| 330                                    | 340                                    | 1.78369100 14                                           | 1.05605920-04                               |
| 340                                    | 350                                    | 3.62721450 14                                           | 2.08561920-04                               |
| 350                                    | 360                                    | 7.06537180 14                                           | 3.94863780-04                               |
| 360                                    | 370                                    | 1.32302380 15                                           | 7.19231500-04                               |
| 370                                    | 380                                    | 2.38928000 15                                           | 1.26437930-03                               |
| 380                                    | 390                                    | 4.17334080 15                                           | 2.15133230-03                               |
| 390                                    | 400                                    | 7.06873270 15                                           | 3.55195360-03                               |
| 400                                    | 410                                    | 1.16372990 16                                           | 5.70367310-03                               |
| 410                                    | 420                                    | 1.86607730 16                                           | 8.92627570-03                               |
| 420                                    | 430                                    | 2.92012360 16                                           | 1.36404720-02                               |
| 430                                    | 440                                    | 4.46701750 16                                           | 2.03878390-02                               |
| 440                                    | 450                                    | 6.69054550 16                                           | 2.98516050-02                               |
| 450                                    | 460                                    | 9.82550570 16                                           | 4.28776490-02                               |
| 460                                    | 470                                    | 1.41666060 17                                           | 6.04950360-02                               |
| 470                                    | 480                                    | 2.00776980 17                                           | 8.39353550-02                               |
| 480                                    | 490                                    | 2.80011250 17                                           | 1.14650160-01                               |
| 490                                    | 500                                    | 3.84669630 17                                           | 1.54325790-01                               |
| 500                                    | 510                                    | 5.21018800 17                                           | 2.04895090-01                               |
| 510                                    | 520                                    | 6.96374040 17                                           | 2.68545260-01                               |
| 520                                    | 530                                    | 9.19173240 17                                           | 3.47721740-01                               |
| 530                                    | 540                                    | 1.19904030 18                                           | 4.45127610-01                               |
| 540                                    | 550                                    | 1.54683610 18                                           | 5.63718430-01                               |
| 550                                    | 560                                    | 1.97469450 18                                           | 7.06692610-01                               |
| 560                                    | 570                                    | 2.49604360 18                                           | 8.77477200-01                               |
| 570                                    | 580                                    | 3.12560990 18                                           | 1.07970960 00                               |
| 580                                    | 590                                    | 3.87940570 18                                           | 1.31721510 00                               |
| 590                                    | 600                                    | 4.77469930 18                                           | 1.59398130 00                               |
| 600                                    | 610                                    | 5.82996800 18                                           | 1.91412950 00                               |
| 610                                    | 620                                    | 7.06483520 18                                           | 2.28188290 00                               |
| 620                                    | 630                                    | 8.49999170 18                                           | 2.70153400 00                               |
| 630                                    | 640                                    | 1.01571030 19                                           | 3.17740990 00                               |
| 640                                    | 650                                    | 1.20587030 19                                           | 3.71383700 00                               |
| 650                                    | 660                                    | 1.42280790 19                                           | 4.31510560 00                               |
| 660                                    | 670                                    | 1.66891420 19                                           | 4.98543490 00                               |
| 670                                    | 680                                    | 1.94662950 19                                           | 5.72893860 00                               |
| 680                                    | 690                                    | 2.25842910 19                                           | 6.54959190 00                               |
| 690                                    | 700                                    | 2.60680890 19                                           | 7.45120010 00                               |
| 700                                    | 710                                    | 2.99427080 19                                           | 8.43736980 00                               |
| 710                                    | 720                                    | 3.42330800 19                                           | 9.51148100 00                               |
| 720                                    | 730                                    | 3.89639030 19                                           | 1.06766630 01                               |
| 730                                    | 740                                    | 4.41594960 19                                           | 1.19357750 01                               |
| 740                                    | 750                                    | 4.98436630 19                                           | 1.32913810 01                               |
| 750                                    | 760                                    | 5.60395590 19                                           | 1.47457410 01                               |
| 760                                    | 770                                    | 6.27695570 19                                           | 1.63007950 01                               |
| 770                                    | 780                                    | 7.00551350 19                                           | 1.79581500 01                               |
| 780                                    | 790                                    | 7.79167600 19                                           | 1.97190780 01                               |
| 790                                    | 800                                    | 8.63737880 19                                           | 2.15845080 01                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 9.54443650 10                                                                | 2.35550240 01                                             |
| 810                                    | 820                                    | 1.05145350 20                                                                | 2.56308700 01                                             |
| 820                                    | 830                                    | 1.15492250 20                                                                | 2.78119480 01                                             |
| 830                                    | 840                                    | 1.26499110 20                                                                | 3.00978240 01                                             |
| 840                                    | 850                                    | 1.38178550 20                                                                | 3.24877380 01                                             |
| 850                                    | 860                                    | 1.50541610 20                                                                | 3.49806140 01                                             |
| 860                                    | 870                                    | 1.63597820 20                                                                | 3.75750630 01                                             |
| 870                                    | 880                                    | 1.77355110 20                                                                | 4.02694070 01                                             |
| 880                                    | 890                                    | 1.91819820 20                                                                | 4.30616820 01                                             |
| 890                                    | 900                                    | 2.06996680 20                                                                | 4.59496580 01                                             |
| 900                                    | 910                                    | 2.22888850 20                                                                | 4.89308530 01                                             |
| 910                                    | 920                                    | 2.39497890 20                                                                | 5.20025510 01                                             |
| 920                                    | 930                                    | 2.56823780 20                                                                | 5.51618140 01                                             |
| 930                                    | 940                                    | 2.74864980 20                                                                | 5.84055050 01                                             |
| 940                                    | 950                                    | 2.93618430 20                                                                | 6.17303000 01                                             |
| 950                                    | 960                                    | 3.13079600 20                                                                | 6.51327090 01                                             |
| 960                                    | 970                                    | 3.33242530 20                                                                | 6.86090920 01                                             |
| 970                                    | 980                                    | 3.54099880 20                                                                | 7.21556770 01                                             |
| 980                                    | 990                                    | 3.75642970 20                                                                | 7.57685750 01                                             |
| 990                                    | 1000                                   | 3.97861850 20                                                                | 7.94437990 01                                             |
| 1000                                   | 1010                                   | 4.20745330 20                                                                | 8.31772800 01                                             |
| 1010                                   | 1020                                   | 4.44281090 20                                                                | 8.69648810 01                                             |
| 1020                                   | 1030                                   | 4.68455690 20                                                                | 9.08024150 01                                             |
| 1030                                   | 1040                                   | 4.93254670 20                                                                | 9.46856560 01                                             |
| 1040                                   | 1050                                   | 5.18662580 20                                                                | 9.86103570 01                                             |
| 1050                                   | 1060                                   | 5.44663090 20                                                                | 1.02572260 02                                             |
| 1060                                   | 1070                                   | 5.71239010 20                                                                | 1.06567120 02                                             |
| 1070                                   | 1080                                   | 5.98372390 20                                                                | 1.10590690 02                                             |
| 1080                                   | 1090                                   | 6.26044580 20                                                                | 1.14638760 02                                             |
| 1090                                   | 1100                                   | 6.54236270 20                                                                | 1.18707160 02                                             |
| 1100                                   | 1110                                   | 6.82927580 20                                                                | 1.22791760 02                                             |
| 1110                                   | 1120                                   | 7.12098130 20                                                                | 1.26888490 02                                             |
| 1120                                   | 1130                                   | 7.41727060 20                                                                | 1.30993360 02                                             |
| 1130                                   | 1140                                   | 7.71793150 20                                                                | 1.35102420 02                                             |
| 1140                                   | 1150                                   | 8.02274830 20                                                                | 1.39211820 02                                             |
| 1150                                   | 1160                                   | 8.33150240 20                                                                | 1.43317800 02                                             |
| 1160                                   | 1170                                   | 8.64397340 20                                                                | 1.47416680 02                                             |
| 1170                                   | 1180                                   | 8.95993890 20                                                                | 1.51504890 02                                             |
| 1180                                   | 1190                                   | 9.27917540 20                                                                | 1.55578940 02                                             |
| 1190                                   | 1200                                   | 9.60145870 20                                                                | 1.59635470 02                                             |
| 1200                                   | 1210                                   | 9.92656460 20                                                                | 1.63671210 02                                             |
| 1210                                   | 1220                                   | 1.02542690 21                                                                | 1.67683020 02                                             |
| 1220                                   | 1230                                   | 1.05843480 21                                                                | 1.71667850 02                                             |
| 1230                                   | 1240                                   | 1.09165800 21                                                                | 1.75622780 02                                             |
| 1240                                   | 1250                                   | 1.12507440 21                                                                | 1.79545010 02                                             |
| 1250                                   | 1260                                   | 1.15866210 21                                                                | 1.83431850 02                                             |
| 1260                                   | 1270                                   | 1.19230930 21                                                                | 1.87280730 02                                             |
| 1270                                   | 1280                                   | 1.22626460 21                                                                | 1.91089200 02                                             |
| 1280                                   | 1290                                   | 1.26023690 21                                                                | 1.94854930 02                                             |
| 1290                                   | 1300                                   | 1.29429520 21                                                                | 1.98575710 02                                             |
| 1300                                   | 1310                                   | 1.32841900 21                                                                | 2.02249430 02                                             |

R.K.H. Cebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 1.36258810 21                                                                  | 2.05874130 02                                              |
| 1320                                           | 1330                                           | 1.39678270 21                                                                  | 2.09447940 02                                              |
| 1330                                           | 1340                                           | 1.43098330 21                                                                  | 2.12969100 02                                              |
| 1340                                           | 1350                                           | 1.46517090 21                                                                  | 2.16435980 02                                              |
| 1350                                           | 1360                                           | 1.49932680 21                                                                  | 2.19847050 02                                              |
| 1360                                           | 1370                                           | 1.53343290 21                                                                  | 2.23200890 02                                              |
| 1370                                           | 1380                                           | 1.56747140 21                                                                  | 2.26496180 02                                              |
| 1380                                           | 1390                                           | 1.60142500 21                                                                  | 2.29731710 02                                              |
| 1390                                           | 1400                                           | 1.63527700 21                                                                  | 2.32906370 02                                              |
| 1400                                           | 1410                                           | 1.66901090 21                                                                  | 2.36019150 02                                              |
| 1410                                           | 1420                                           | 1.70261100 21                                                                  | 2.39069140 02                                              |
| 1420                                           | 1430                                           | 1.73606180 21                                                                  | 2.42055510 02                                              |
| 1430                                           | 1440                                           | 1.76934840 21                                                                  | 2.44977520 02                                              |
| 1440                                           | 1450                                           | 1.80245640 21                                                                  | 2.47834540 02                                              |
| 1450                                           | 1460                                           | 1.83537200 21                                                                  | 2.50626000 02                                              |
| 1460                                           | 1470                                           | 1.86808160 21                                                                  | 2.53351430 02                                              |
| 1470                                           | 1480                                           | 1.90057250 21                                                                  | 2.56010430 02                                              |
| 1480                                           | 1490                                           | 1.93283210 21                                                                  | 2.58602670 02                                              |
| 1490                                           | 1500                                           | 1.96484840 21                                                                  | 2.61127920 02                                              |
| 1500                                           | 1510                                           | 1.99661010 21                                                                  | 2.63585990 02                                              |
| 1510                                           | 1520                                           | 2.02810620 21                                                                  | 2.65976760 02                                              |
| 1520                                           | 1530                                           | 2.05932610 21                                                                  | 2.68300210 02                                              |
| 1530                                           | 1540                                           | 2.09025980 21                                                                  | 2.70556340 02                                              |
| 1540                                           | 1550                                           | 2.12089780 21                                                                  | 2.72745230 02                                              |
| 1550                                           | 1560                                           | 2.15123100 21                                                                  | 2.74867020 02                                              |
| 1560                                           | 1570                                           | 2.18125070 21                                                                  | 2.76921900 02                                              |
| 1570                                           | 1580                                           | 2.21094860 21                                                                  | 2.78910100 02                                              |
| 1580                                           | 1590                                           | 2.24031720 21                                                                  | 2.80831910 02                                              |
| 1590                                           | 1600                                           | 2.26934890 21                                                                  | 2.82687680 02                                              |
| 1600                                           | 1610                                           | 2.29803700 21                                                                  | 2.84477770 02                                              |
| 1610                                           | 1620                                           | 2.32637490 21                                                                  | 2.86202620 02                                              |
| 1620                                           | 1630                                           | 2.35435650 21                                                                  | 2.87862680 02                                              |
| 1630                                           | 1640                                           | 2.38197620 21                                                                  | 2.89458450 02                                              |
| 1640                                           | 1650                                           | 2.40922870 21                                                                  | 2.90990460 02                                              |
| 1650                                           | 1660                                           | 2.43610910 21                                                                  | 2.92459280 02                                              |
| 1660                                           | 1670                                           | 2.46261270 21                                                                  | 2.93865510 02                                              |
| 1670                                           | 1680                                           | 2.48873560 21                                                                  | 2.95209780 02                                              |
| 1680                                           | 1690                                           | 2.51447370 21                                                                  | 2.96492730 02                                              |
| 1690                                           | 1700                                           | 2.53982370 21                                                                  | 2.97715040 02                                              |
| 1700                                           | 1710                                           | 2.56478240 21                                                                  | 2.98877410 02                                              |
| 1710                                           | 1720                                           | 2.58934690 21                                                                  | 2.99980560 02                                              |
| 1720                                           | 1730                                           | 2.61351480 21                                                                  | 3.01025240 02                                              |
| 1730                                           | 1740                                           | 2.63728390 21                                                                  | 3.02012210 02                                              |
| 1740                                           | 1750                                           | 2.66065220 21                                                                  | 3.02942230 02                                              |
| 1750                                           | 1760                                           | 2.68361820 21                                                                  | 3.03816100 02                                              |
| 1760                                           | 1770                                           | 2.70618040 21                                                                  | 3.04634620 02                                              |
| 1770                                           | 1780                                           | 2.72833790 21                                                                  | 3.05398610 02                                              |
| 1780                                           | 1790                                           | 2.75008980 21                                                                  | 3.06108900 02                                              |
| 1790                                           | 1800                                           | 2.77143550 21                                                                  | 3.06766310 02                                              |
| 1800                                           | 1810                                           | 2.79237480 21                                                                  | 3.07371700 02                                              |

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Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 1500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 2.81290750 21                                                                  | 3.07725910 02                                              |
| 1820                                           | 1830                                           | 2.83301380 21                                                                  | 3.08429800 02                                              |
| 1830                                           | 1840                                           | 2.85275410 21                                                                  | 3.08884240 02                                              |
| 1840                                           | 1850                                           | 2.87206880 21                                                                  | 3.09290080 02                                              |
| 1850                                           | 1860                                           | 2.89097880 21                                                                  | 3.09648190 02                                              |
| 1860                                           | 1870                                           | 2.90948510 21                                                                  | 3.09959450 02                                              |
| 1870                                           | 1880                                           | 2.92758870 21                                                                  | 3.10224720 02                                              |
| 1880                                           | 1890                                           | 2.94529100 21                                                                  | 3.10444870 02                                              |
| 1890                                           | 1900                                           | 2.96259340 21                                                                  | 3.10620780 02                                              |
| 1900                                           | 1910                                           | 2.97949770 21                                                                  | 3.10753310 02                                              |
| 1910                                           | 1920                                           | 2.99600560 21                                                                  | 3.10843330 02                                              |
| 1920                                           | 1930                                           | 3.01211900 21                                                                  | 3.10891700 02                                              |
| 1930                                           | 1940                                           | 3.02784000 21                                                                  | 3.10899280 02                                              |
| 1940                                           | 1950                                           | 3.04317100 21                                                                  | 3.10866940 02                                              |
| 1950                                           | 1960                                           | 3.05811410 21                                                                  | 3.10795510 02                                              |
| 1960                                           | 1970                                           | 3.07267190 21                                                                  | 3.10685840 02                                              |
| 1970                                           | 1980                                           | 3.08684690 21                                                                  | 3.10538780 02                                              |
| 1980                                           | 1990                                           | 3.10064190 21                                                                  | 3.10355170 02                                              |
| 1990                                           | 2000                                           | 3.11405970 21                                                                  | 3.10135820 02                                              |
| 2000                                           | 2010                                           | 3.12710300 21                                                                  | 3.09881550 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 3.17977490 22                                                                | 3.08200990 03                                             |
| 2100                                   | 2200                                   | 3.27483360 22                                                                | 3.02661060 03                                             |
| 2200                                   | 2300                                   | 3.33783160 22                                                                | 2.94779940 03                                             |
| 2300                                   | 2400                                   | 3.37260080 22                                                                | 2.85180860 03                                             |
| 2400                                   | 2500                                   | 3.38297570 22                                                                | 2.74385480 03                                             |
| 2500                                   | 2600                                   | 3.37261910 22                                                                | 2.62820230 03                                             |
| 2600                                   | 2700                                   | 3.34491890 22                                                                | 2.50826520 03                                             |
| 2700                                   | 2800                                   | 3.30293520 22                                                                | 2.38672400 03                                             |
| 2800                                   | 2900                                   | 3.24938790 22                                                                | 2.26564170 03                                             |
| 2900                                   | 3000                                   | 3.18663580 22                                                                | 2.14657180 03                                             |
| 3000                                   | 3200                                   | 6.15820910 22                                                                | 3.94934730 03                                             |
| 3200                                   | 3400                                   | 5.84272610 22                                                                | 3.51985840 03                                             |
| 3400                                   | 3600                                   | 5.50980210 22                                                                | 3.12953870 03                                             |
| 3600                                   | 3800                                   | 5.17343250 22                                                                | 2.77956740 03                                             |
| 3800                                   | 4000                                   | 4.84297100 22                                                                | 2.46851020 03                                             |
| 4000                                   | 4200                                   | 4.52440730 22                                                                | 2.19357870 03                                             |
| 4200                                   | 4400                                   | 4.22134310 22                                                                | 1.95139750 03                                             |
| 4400                                   | 4600                                   | 3.93571580 22                                                                | 1.73845530 03                                             |
| 4600                                   | 4800                                   | 3.66832470 22                                                                | 1.55135660 03                                             |
| 4800                                   | 5000                                   | 3.41920790 22                                                                | 1.38695130 03                                             |
| 5000                                   | 5500                                   | 7.57314620 22                                                                | 2.97217970 03                                             |
| 5500                                   | 6000                                   | 6.37997650 22                                                                | 2.20863990 03                                             |
| 6000                                   | 6500                                   | 5.40210040 22                                                                | 1.72010750 03                                             |
| 6500                                   | 7000                                   | 4.60061540 22                                                                | 1.35612890 03                                             |
| 7000                                   | 7500                                   | 3.94166320 22                                                                | 1.08158250 03                                             |
| 7500                                   | 8000                                   | 3.39734260 22                                                                | 8.71959090 02                                             |
| 8000                                   | 8500                                   | 2.94523080 22                                                                | 7.10024030 02                                             |
| 8500                                   | 9000                                   | 2.56750530 22                                                                | 5.83535740 02                                             |
| 9000                                   | 9500                                   | 2.25005280 22                                                                | 4.83701730 02                                             |
| 9500                                   | 10000                                  | 1.98169230 22                                                                | 4.04134350 02                                             |
| 10000                                  | 11000                                  | 3.31205600 22                                                                | 6.28372940 02                                             |
| 11000                                  | 12000                                  | 2.63714270 22                                                                | 4.56634690 02                                             |
| 12000                                  | 13000                                  | 2.13186300 22                                                                | 3.39503150 02                                             |
| 13000                                  | 14000                                  | 1.74670510 22                                                                | 2.57495340 02                                             |
| 14000                                  | 15000                                  | 1.44832260 22                                                                | 1.98742460 02                                             |
| 15000                                  | 15000                                  | 1.21377940 22                                                                | 1.55785540 02                                             |

R.K.H. Gebel. Blackbody functions.  
Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 4.0126552D 16                                                                | 2.6096521D-02                                             |
| 310                                    | 320                                    | 7.4418160D 16                                                                | 4.6869487D-02                                             |
| 320                                    | 330                                    | 1.3237554D 17                                                                | 8.0818121D-02                                             |
| 330                                    | 340                                    | 2.2671433D 17                                                                | 1.3429925D-01                                             |
| 340                                    | 350                                    | 3.7511100D 17                                                                | 2.1578876D-01                                             |
| 350                                    | 360                                    | 6.0138309D 17                                                                | 3.3624370D-01                                             |
| 360                                    | 370                                    | 9.3672166D 17                                                                | 5.0943340D-01                                             |
| 370                                    | 380                                    | 1.4209236D 18                                                                | 7.5221752D-01                                             |
| 380                                    | 390                                    | 2.1035665D 18                                                                | 1.0847512D 00                                             |
| 390                                    | 400                                    | 3.0450680D 18                                                                | 1.5306011D 00                                             |
| 400                                    | 410                                    | 4.3175758D 18                                                                | 2.1167608D 00                                             |
| 410                                    | 420                                    | 6.0056387D 18                                                                | 2.8735598D 00                                             |
| 420                                    | 430                                    | 8.2066219D 18                                                                | 3.8344648D 00                                             |
| 430                                    | 440                                    | 1.1030838D 19                                                                | 5.0357796D 00                                             |
| 440                                    | 450                                    | 1.4601375D 19                                                                | 6.5162505D 00                                             |
| 450                                    | 460                                    | 1.9053630D 19                                                                | 8.3165918D 00                                             |
| 460                                    | 470                                    | 2.4534535D 19                                                                | 1.0478946D 01                                             |
| 470                                    | 480                                    | 3.1201518D 19                                                                | 1.3046299D 01                                             |
| 480                                    | 490                                    | 3.9221210D 19                                                                | 1.6061862D 01                                             |
| 490                                    | 500                                    | 4.8767937D 19                                                                | 1.9568443D 01                                             |
| 500                                    | 510                                    | 6.0022043D 19                                                                | 2.3607830D 01                                             |
| 510                                    | 520                                    | 7.3168071D 19                                                                | 2.8220185D 01                                             |
| 520                                    | 530                                    | 8.8392864D 19                                                                | 3.3443481D 01                                             |
| 530                                    | 540                                    | 1.0588361D 20                                                                | 3.9312983D 01                                             |
| 540                                    | 550                                    | 1.2582590D 20                                                                | 4.5860783D 01                                             |
| 550                                    | 560                                    | 1.4840180D 20                                                                | 5.3115400D 01                                             |
| 560                                    | 570                                    | 1.7378799D 20                                                                | 6.1101440D 01                                             |
| 570                                    | 580                                    | 2.0215401D 20                                                                | 6.9839335D 01                                             |
| 580                                    | 590                                    | 2.3366066D 20                                                                | 7.9345146D 01                                             |
| 590                                    | 600                                    | 2.6845848D 20                                                                | 8.9630428D 01                                             |
| 600                                    | 610                                    | 3.0668643D 20                                                                | 1.0070217D 02                                             |
| 610                                    | 620                                    | 3.4847073D 20                                                                | 1.1256280D 02                                             |
| 620                                    | 630                                    | 3.9392391D 20                                                                | 1.2521022D 02                                             |
| 630                                    | 640                                    | 4.4314397D 20                                                                | 1.3863794D 02                                             |
| 640                                    | 650                                    | 4.9621379D 20                                                                | 1.5283519D 02                                             |
| 650                                    | 660                                    | 5.5320069D 20                                                                | 1.6778716D 02                                             |
| 660                                    | 670                                    | 6.1415614D 20                                                                | 1.8347517D 02                                             |
| 670                                    | 680                                    | 6.7911566D 20                                                                | 1.9987699D 02                                             |
| 680                                    | 690                                    | 7.4809885D 20                                                                | 2.1696703D 02                                             |
| 690                                    | 700                                    | 8.2110959D 20                                                                | 2.3471670D 02                                             |
| 700                                    | 710                                    | 8.9813630D 20                                                                | 2.5309467D 02                                             |
| 710                                    | 720                                    | 9.7915240D 20                                                                | 2.7206720D 02                                             |
| 720                                    | 730                                    | 1.0641168D 21                                                                | 2.9159842D 02                                             |
| 730                                    | 740                                    | 1.1529746D 21                                                                | 3.1165069D 02                                             |
| 740                                    | 750                                    | 1.2456576D 21                                                                | 3.3218482D 02                                             |
| 750                                    | 760                                    | 1.3420850D 21                                                                | 3.5316046D 02                                             |
| 760                                    | 770                                    | 1.4421646D 21                                                                | 3.7453630D 02                                             |
| 770                                    | 780                                    | 1.5457931D 21                                                                | 3.9627039D 02                                             |
| 780                                    | 790                                    | 1.6528574D 21                                                                | 4.1832039D 02                                             |
| 790                                    | 800                                    | 1.7632350D 21                                                                | 4.4064378D 02                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 2000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 1.87679540 21                                                                | 4.63198150 02                                             |
| 810                                    | 820                                    | 1.99340050 21                                                                | 4.85941350 02                                             |
| 820                                    | 830                                    | 2.11290580 21                                                                | 5.08831700 02                                             |
| 830                                    | 840                                    | 2.23516110 21                                                                | 5.31828170 02                                             |
| 840                                    | 850                                    | 2.36001140 21                                                                | 5.54890550 02                                             |
| 850                                    | 860                                    | 2.48729760 21                                                                | 5.77979570 02                                             |
| 860                                    | 870                                    | 2.61685760 21                                                                | 6.01057040 02                                             |
| 870                                    | 880                                    | 2.74852650 21                                                                | 6.24085940 02                                             |
| 880                                    | 890                                    | 2.88213800 21                                                                | 6.47030540 02                                             |
| 890                                    | 900                                    | 3.01752430 21                                                                | 6.69856470 02                                             |
| 900                                    | 910                                    | 3.15451750 21                                                                | 6.92530780 02                                             |
| 910                                    | 920                                    | 3.29294980 21                                                                | 7.15021980 02                                             |
| 920                                    | 930                                    | 3.43265410 21                                                                | 7.37300120 02                                             |
| 930                                    | 940                                    | 3.57346440 21                                                                | 7.59336790 02                                             |
| 940                                    | 950                                    | 3.71521680 21                                                                | 7.81105160 02                                             |
| 950                                    | 960                                    | 3.85774920 21                                                                | 8.02579950 02                                             |
| 960                                    | 970                                    | 4.00090230 21                                                                | 8.23737490 02                                             |
| 970                                    | 980                                    | 4.14451970 21                                                                | 8.44555670 02                                             |
| 980                                    | 990                                    | 4.28844840 21                                                                | 8.65013940 02                                             |
| 990                                    | 1000                                   | 4.43253880 21                                                                | 8.85093290 02                                             |
| 1000                                   | 1010                                   | 4.57664400 21                                                                | 9.04776240 02                                             |
| 1010                                   | 1020                                   | 4.72062600 21                                                                | 9.24046770 02                                             |
| 1020                                   | 1030                                   | 4.86434390 21                                                                | 9.42890350 02                                             |
| 1030                                   | 1040                                   | 5.00766610 21                                                                | 9.61293830 02                                             |
| 1040                                   | 1050                                   | 5.15046410 21                                                                | 9.79245440 02                                             |
| 1050                                   | 1060                                   | 5.29261430 21                                                                | 9.96734760 02                                             |
| 1060                                   | 1070                                   | 5.43399790 21                                                                | 1.01375260 03                                             |
| 1070                                   | 1080                                   | 5.57450090 21                                                                | 1.03029110 03                                             |
| 1080                                   | 1090                                   | 5.71401410 21                                                                | 1.04634350 03                                             |
| 1090                                   | 1100                                   | 5.85243330 21                                                                | 1.06190420 03                                             |
| 1100                                   | 1110                                   | 5.98965930 21                                                                | 1.07696870 03                                             |
| 1110                                   | 1120                                   | 6.12559760 21                                                                | 1.09153360 03                                             |
| 1120                                   | 1130                                   | 6.26015880 21                                                                | 1.10559630 03                                             |
| 1130                                   | 1140                                   | 6.39325820 21                                                                | 1.11915530 03                                             |
| 1140                                   | 1150                                   | 6.52481590 21                                                                | 1.13220990 03                                             |
| 1150                                   | 1160                                   | 6.65475680 21                                                                | 1.14476040 03                                             |
| 1160                                   | 1170                                   | 6.78301040 21                                                                | 1.15680760 03                                             |
| 1170                                   | 1180                                   | 6.90951080 21                                                                | 1.16835340 03                                             |
| 1180                                   | 1190                                   | 7.03419650 21                                                                | 1.17940000 03                                             |
| 1190                                   | 1200                                   | 7.15701050 21                                                                | 1.18995050 03                                             |
| 1200                                   | 1210                                   | 7.27790000 21                                                                | 1.20000850 03                                             |
| 1210                                   | 1220                                   | 7.39681640 21                                                                | 1.20957840 03                                             |
| 1220                                   | 1230                                   | 7.51371510 21                                                                | 1.21866470 03                                             |
| 1230                                   | 1240                                   | 7.62855550 21                                                                | 1.22727280 03                                             |
| 1240                                   | 1250                                   | 7.74130090 21                                                                | 1.23540820 03                                             |
| 1250                                   | 1260                                   | 7.85191800 21                                                                | 1.24307710 03                                             |
| 1260                                   | 1270                                   | 7.96037740 21                                                                | 1.25028580 03                                             |
| 1270                                   | 1280                                   | 8.06665290 21                                                                | 1.25704110 03                                             |
| 1280                                   | 1290                                   | 8.17072180 21                                                                | 1.26335000 03                                             |
| 1290                                   | 1300                                   | 8.27256460 21                                                                | 1.26922000 03                                             |
| 1300                                   | 1310                                   | 8.37216470 21                                                                | 1.27465860 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 8.46950850 21                                                                | 1.27967350 03                                             |
| 1320                                   | 1330                                   | 8.56458530 21                                                                | 1.28427280 03                                             |
| 1330                                   | 1340                                   | 8.65738720 21                                                                | 1.28846460 03                                             |
| 1340                                   | 1350                                   | 8.74790850 21                                                                | 1.29225720 03                                             |
| 1350                                   | 1360                                   | 8.83614640 21                                                                | 1.29565900 03                                             |
| 1360                                   | 1370                                   | 8.92210020 21                                                                | 1.29867840 03                                             |
| 1370                                   | 1380                                   | 9.00577150 21                                                                | 1.30132410 03                                             |
| 1380                                   | 1390                                   | 9.08716390 21                                                                | 1.30360470 03                                             |
| 1390                                   | 1400                                   | 9.16628320 21                                                                | 1.30552890 03                                             |
| 1400                                   | 1410                                   | 9.24313700 21                                                                | 1.30710520 03                                             |
| 1410                                   | 1420                                   | 9.31773470 21                                                                | 1.30834250 03                                             |
| 1420                                   | 1430                                   | 9.39008750 21                                                                | 1.30924940 03                                             |
| 1430                                   | 1440                                   | 9.46020790 21                                                                | 1.30983460 03                                             |
| 1440                                   | 1450                                   | 9.52811030 21                                                                | 1.31010670 03                                             |
| 1450                                   | 1460                                   | 9.59381020 21                                                                | 1.31007430 03                                             |
| 1460                                   | 1470                                   | 9.65732470 21                                                                | 1.30974590 03                                             |
| 1470                                   | 1480                                   | 9.71867180 21                                                                | 1.30913010 03                                             |
| 1480                                   | 1490                                   | 9.77787100 21                                                                | 1.30823510 03                                             |
| 1490                                   | 1500                                   | 9.83494260 21                                                                | 1.30706940 03                                             |
| 1500                                   | 1510                                   | 9.88990800 21                                                                | 1.30564100 03                                             |
| 1510                                   | 1520                                   | 9.94278960 21                                                                | 1.30395830 03                                             |
| 1520                                   | 1530                                   | 9.99361050 21                                                                | 1.30202910 03                                             |
| 1530                                   | 1540                                   | 1.00423950 22                                                                | 1.29986150 03                                             |
| 1540                                   | 1550                                   | 1.00891670 22                                                                | 1.29746320 03                                             |
| 1550                                   | 1560                                   | 1.01339520 22                                                                | 1.29484180 03                                             |
| 1560                                   | 1570                                   | 1.01767770 22                                                                | 1.29200500 03                                             |
| 1570                                   | 1580                                   | 1.02176670 22                                                                | 1.28896020 03                                             |
| 1580                                   | 1590                                   | 1.02566500 22                                                                | 1.28571470 03                                             |
| 1590                                   | 1600                                   | 1.02937530 22                                                                | 1.28227570 03                                             |
| 1600                                   | 1610                                   | 1.03290030 22                                                                | 1.27865030 03                                             |
| 1610                                   | 1620                                   | 1.03624290 22                                                                | 1.27484530 03                                             |
| 1620                                   | 1630                                   | 1.03940590 22                                                                | 1.27086750 03                                             |
| 1630                                   | 1640                                   | 1.04239210 22                                                                | 1.26672360 03                                             |
| 1640                                   | 1650                                   | 1.04520450 22                                                                | 1.26242010 03                                             |
| 1650                                   | 1660                                   | 1.04784590 22                                                                | 1.25796330 03                                             |
| 1660                                   | 1670                                   | 1.05031920 22                                                                | 1.25335940 03                                             |
| 1670                                   | 1680                                   | 1.05262740 22                                                                | 1.24861470 03                                             |
| 1680                                   | 1690                                   | 1.05477330 22                                                                | 1.24373490 03                                             |
| 1690                                   | 1700                                   | 1.05675980 22                                                                | 1.23872590 03                                             |
| 1700                                   | 1710                                   | 1.05859000 22                                                                | 1.23359340 03                                             |
| 1710                                   | 1720                                   | 1.06026670 22                                                                | 1.22834300 03                                             |
| 1720                                   | 1730                                   | 1.06179270 22                                                                | 1.22297990 03                                             |
| 1730                                   | 1740                                   | 1.06317110 22                                                                | 1.21750960 03                                             |
| 1740                                   | 1750                                   | 1.06440470 22                                                                | 1.21193710 03                                             |
| 1750                                   | 1760                                   | 1.06549630 22                                                                | 1.20626740 03                                             |
| 1760                                   | 1770                                   | 1.06644890 22                                                                | 1.20050540 03                                             |
| 1770                                   | 1780                                   | 1.06726530 22                                                                | 1.19465580 03                                             |
| 1780                                   | 1790                                   | 1.06794820 22                                                                | 1.18872320 03                                             |
| 1790                                   | 1800                                   | 1.06850060 22                                                                | 1.18271220 03                                             |
| 1800                                   | 1810                                   | 1.06892510 22                                                                | 1.17662710 03                                             |

R.K.H. Gebei, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 2000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 1.06922450 22                                                                  | 1.17047220 03                                              |
| 1820                                           | 1830                                           | 1.06940170 22                                                                  | 1.16425150 03                                              |
| 1830                                           | 1840                                           | 1.06945910 22                                                                  | 1.15796910 03                                              |
| 1840                                           | 1850                                           | 1.06939970 22                                                                  | 1.15162880 03                                              |
| 1850                                           | 1860                                           | 1.06922590 22                                                                  | 1.14523440 03                                              |
| 1860                                           | 1870                                           | 1.06894040 22                                                                  | 1.13878970 03                                              |
| 1870                                           | 1880                                           | 1.06854590 22                                                                  | 1.13229810 03                                              |
| 1880                                           | 1890                                           | 1.06804480 22                                                                  | 1.12576310 03                                              |
| 1890                                           | 1900                                           | 1.06743970 22                                                                  | 1.11918790 03                                              |
| 1900                                           | 1910                                           | 1.06673310 22                                                                  | 1.11257600 03                                              |
| 1910                                           | 1920                                           | 1.06592750 22                                                                  | 1.10593030 03                                              |
| 1920                                           | 1930                                           | 1.06502520 22                                                                  | 1.09925400 03                                              |
| 1930                                           | 1940                                           | 1.06402880 22                                                                  | 1.09255000 03                                              |
| 1940                                           | 1950                                           | 1.06294040 22                                                                  | 1.08582100 03                                              |
| 1950                                           | 1960                                           | 1.06176260 22                                                                  | 1.07906990 03                                              |
| 1960                                           | 1970                                           | 1.06049750 22                                                                  | 1.07229930 03                                              |
| 1970                                           | 1980                                           | 1.05914740 22                                                                  | 1.06551180 03                                              |
| 1980                                           | 1990                                           | 1.05771470 22                                                                  | 1.05870980 03                                              |
| 1990                                           | 2000                                           | 1.05620130 22                                                                  | 1.05189580 03                                              |
| 2000                                           | 2010                                           | 1.05460960 22                                                                  | 1.04507210 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

T = 2000°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 2000                                   | 2100                                   | 1.04625530 23                                           | 1.01430960 04                               |
| 2100                                   | 2200                                   | 1.02375320 23                                           | 9.46334000 03                               |
| 2200                                   | 2300                                   | 9.96271690 22                                           | 8.79998890 03                               |
| 2300                                   | 2400                                   | 9.65273560 22                                           | 8.16333230 03                               |
| 2400                                   | 2500                                   | 9.31939890 22                                           | 7.55969130 03                               |
| 2500                                   | 2600                                   | 8.97209910 22                                           | 6.99250770 03                               |
| 2600                                   | 2700                                   | 8.61819850 22                                           | 6.46317950 03                               |
| 2700                                   | 2800                                   | 8.26338500 22                                           | 5.97169010 03                               |
| 2800                                   | 2900                                   | 7.91198290 22                                           | 5.51707320 03                               |
| 2900                                   | 3000                                   | 7.56721830 22                                           | 5.09775340 03                               |
| 3000                                   | 3200                                   | 1.41377450 23                                           | 9.06884010 03                               |
| 3200                                   | 3400                                   | 1.28848990 23                                           | 7.76377220 03                               |
| 3400                                   | 3600                                   | 1.17324150 23                                           | 6.66498910 03                               |
| 3600                                   | 3800                                   | 1.06825110 23                                           | 5.74021520 03                               |
| 3800                                   | 4000                                   | 9.73195320 22                                           | 4.96101490 03                               |
| 4000                                   | 4200                                   | 8.87460750 22                                           | 4.30309520 03                               |
| 4200                                   | 4400                                   | 8.10300050 22                                           | 3.74606580 03                               |
| 4400                                   | 4600                                   | 7.40925590 22                                           | 3.27298530 03                               |
| 4600                                   | 4800                                   | 6.78563320 22                                           | 2.86985500 03                               |
| 4800                                   | 5000                                   | 6.22482140 22                                           | 2.52513750 03                               |
| 5000                                   | 5500                                   | 1.34615860 23                                           | 5.10673750 03                               |
| 5500                                   | 6000                                   | 1.10117930 23                                           | 3.81282590 03                               |
| 6000                                   | 6500                                   | 9.10174750 22                                           | 2.89855140 03                               |
| 6500                                   | 7000                                   | 7.59706360 22                                           | 2.23964940 03                               |
| 7000                                   | 7500                                   | 6.39921830 22                                           | 1.75608730 03                               |
| 7500                                   | 8000                                   | 5.43586520 22                                           | 1.39526550 03                               |
| 8000                                   | 8500                                   | 4.65354130 22                                           | 1.12192280 03                               |
| 8500                                   | 9000                                   | 4.01239790 22                                           | 9.11971650 02                               |
| 9000                                   | 9500                                   | 3.48244910 22                                           | 7.48664880 02                               |
| 9500                                   | 10000                                  | 3.04090740 22                                           | 6.20165670 02                               |
| 10000                                  | 11000                                  | 5.02732630 22                                           | 9.53903030 02                               |
| 11000                                  | 12000                                  | 3.95312770 22                                           | 6.84560000 02                               |
| 12000                                  | 13000                                  | 3.16297810 22                                           | 5.03725710 02                               |
| 13000                                  | 14000                                  | 2.56909410 22                                           | 3.78748620 02                               |
| 14000                                  | 15000                                  | 2.11457970 22                                           | 2.90179270 02                               |
| 15000                                  | 16000                                  | 1.76092870 22                                           | 2.26017940 02                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 4.45852770 18                                                                | 2.90083150 00                                             |
| 310                                    | 320                                    | 7.12494870 18                                                                | 4.48907680 00                                             |
| 320                                    | 330                                    | 1.10204240 19                                                                | 6.73052480 00                                             |
| 330                                    | 340                                    | 1.65483010 19                                                                | 9.80584210 00                                             |
| 340                                    | 350                                    | 2.41883090 19                                                                | 1.39187430 01                                             |
| 350                                    | 360                                    | 3.44969690 19                                                                | 1.92929750 01                                             |
| 360                                    | 370                                    | 4.81052040 19                                                                | 2.61682760 01                                             |
| 370                                    | 380                                    | 6.57131770 19                                                                | 3.47955100 01                                             |
| 380                                    | 390                                    | 8.80825510 19                                                                | 4.54312250 01                                             |
| 390                                    | 400                                    | 1.16026470 20                                                                | 5.83319000 01                                             |
| 400                                    | 410                                    | 1.50397700 20                                                                | 7.37481270 01                                             |
| 410                                    | 420                                    | 1.92075350 20                                                                | 9.19189790 01                                             |
| 420                                    | 430                                    | 2.41950790 20                                                                | 1.13066750 02                                             |
| 430                                    | 440                                    | 3.00913060 20                                                                | 1.37392270 02                                             |
| 440                                    | 450                                    | 3.69834530 20                                                                | 1.65070840 02                                             |
| 450                                    | 460                                    | 4.49556090 20                                                                | 1.96248990 02                                             |
| 460                                    | 470                                    | 5.40878170 20                                                                | 2.31041970 02                                             |
| 470                                    | 480                                    | 6.44540850 20                                                                | 2.69532120 02                                             |
| 480                                    | 490                                    | 7.61221350 20                                                                | 3.11767900 02                                             |
| 490                                    | 500                                    | 8.91521150 20                                                                | 3.57763790 02                                             |
| 500                                    | 510                                    | 1.03595950 21                                                                | 4.07500750 02                                             |
| 510                                    | 520                                    | 1.19496760 21                                                                | 4.60927310 02                                             |
| 520                                    | 530                                    | 1.36888520 21                                                                | 5.17961200 02                                             |
| 530                                    | 540                                    | 1.55795760 21                                                                | 5.78491300 02                                             |
| 540                                    | 550                                    | 1.76233520 21                                                                | 6.42380040 02                                             |
| 550                                    | 560                                    | 1.98207380 21                                                                | 7.09465910 02                                             |
| 560                                    | 570                                    | 2.21713690 21                                                                | 7.79566260 02                                             |
| 570                                    | 580                                    | 2.46739780 21                                                                | 8.52480140 02                                             |
| 580                                    | 590                                    | 2.73264420 21                                                                | 9.27991120 02                                             |
| 590                                    | 600                                    | 3.01258220 21                                                                | 1.00587020 03                                             |
| 600                                    | 610                                    | 3.30684220 21                                                                | 1.08587850 03                                             |
| 610                                    | 620                                    | 3.61498420 21                                                                | 1.16777010 03                                             |
| 620                                    | 630                                    | 3.93650400 21                                                                | 1.25129420 03                                             |
| 630                                    | 640                                    | 4.27083990 21                                                                | 1.33619810 03                                             |
| 640                                    | 650                                    | 4.61737890 21                                                                | 1.42222870 03                                             |
| 650                                    | 660                                    | 4.97546330 21                                                                | 1.50913480 03                                             |
| 660                                    | 670                                    | 5.34439710 21                                                                | 1.59666910 03                                             |
| 670                                    | 680                                    | 5.72345250 21                                                                | 1.68458930 03                                             |
| 680                                    | 690                                    | 6.11187610 21                                                                | 1.77266010 03                                             |
| 690                                    | 700                                    | 6.50889450 21                                                                | 1.86065390 03                                             |
| 700                                    | 710                                    | 6.91372000 21                                                                | 1.94835180 03                                             |
| 710                                    | 720                                    | 7.32555620 21                                                                | 2.03554500 03                                             |
| 720                                    | 730                                    | 7.74360240 21                                                                | 2.12203500 03                                             |
| 730                                    | 740                                    | 8.16705850 21                                                                | 2.20763410 03                                             |
| 740                                    | 750                                    | 8.59512920 21                                                                | 2.29216620 03                                             |
| 750                                    | 760                                    | 9.02702770 21                                                                | 2.37546650 03                                             |
| 760                                    | 770                                    | 9.46197930 21                                                                | 2.45738210 03                                             |
| 770                                    | 780                                    | 9.89922430 21                                                                | 2.53777180 03                                             |
| 780                                    | 790                                    | 1.03380210 22                                                                | 2.61650630 03                                             |
| 790                                    | 800                                    | 1.07776480 22                                                                | 2.69346760 03                                             |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .  
 $T = 2500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 1.1217405D 22                                                                | 2.7685492D 03                                             |
| 810                                    | 820                                    | 1.1656618D 22                                                                | 2.8416558D 03                                             |
| 820                                    | 830                                    | 1.2094638D 22                                                                | 2.9127026D 03                                             |
| 830                                    | 840                                    | 1.2530841D 22                                                                | 2.9816155D 03                                             |
| 840                                    | 850                                    | 1.2964632D 22                                                                | 3.0483303D 03                                             |
| 850                                    | 860                                    | 1.3395444D 22                                                                | 3.1127924D 03                                             |
| 860                                    | 870                                    | 1.3822741D 22                                                                | 3.1749564D 03                                             |
| 870                                    | 880                                    | 1.4246012D 22                                                                | 3.2347857D 03                                             |
| 880                                    | 890                                    | 1.4664779D 22                                                                | 3.2922516D 03                                             |
| 890                                    | 900                                    | 1.5078592D 22                                                                | 3.3473335D 03                                             |
| 900                                    | 910                                    | 1.5487029D 22                                                                | 3.4000181D 03                                             |
| 910                                    | 920                                    | 1.5889698D 22                                                                | 3.4502987D 03                                             |
| 920                                    | 930                                    | 1.6286236D 22                                                                | 3.4981751D 03                                             |
| 930                                    | 940                                    | 1.6676307D 22                                                                | 3.5436530D 03                                             |
| 940                                    | 950                                    | 1.7059600D 22                                                                | 3.5867436D 03                                             |
| 950                                    | 960                                    | 1.7435835D 22                                                                | 3.6274631D 03                                             |
| 960                                    | 970                                    | 1.7804753D 22                                                                | 3.6658324D 03                                             |
| 970                                    | 980                                    | 1.8166124D 22                                                                | 3.7018765D 03                                             |
| 980                                    | 990                                    | 1.8519739D 22                                                                | 3.7356243D 03                                             |
| 990                                    | 1000                                   | 1.8865414D 22                                                                | 3.7671082D 03                                             |
| 1000                                   | 1010                                   | 1.9202987D 22                                                                | 3.7963636D 03                                             |
| 1010                                   | 1020                                   | 1.9532316D 22                                                                | 3.8234290D 03                                             |
| 1020                                   | 1030                                   | 1.9853281D 22                                                                | 3.8483449D 03                                             |
| 1030                                   | 1040                                   | 2.0165781D 22                                                                | 3.8711544D 03                                             |
| 1040                                   | 1050                                   | 2.0469735D 22                                                                | 3.8919023D 03                                             |
| 1050                                   | 1060                                   | 2.0765076D 22                                                                | 3.9106349D 03                                             |
| 1060                                   | 1070                                   | 2.1051758D 22                                                                | 3.9274001D 03                                             |
| 1070                                   | 1080                                   | 2.1329748D 22                                                                | 3.9422469D 03                                             |
| 1080                                   | 1090                                   | 2.1599028D 22                                                                | 3.9552252D 03                                             |
| 1090                                   | 1100                                   | 2.1859597D 22                                                                | 3.9663855D 03                                             |
| 1100                                   | 1110                                   | 2.2111463D 22                                                                | 3.9757791D 03                                             |
| 1110                                   | 1120                                   | 2.2354649D 22                                                                | 3.9834575D 03                                             |
| 1120                                   | 1130                                   | 2.2589190D 22                                                                | 3.9894724D 03                                             |
| 1130                                   | 1140                                   | 2.2815129D 22                                                                | 3.9938757D 03                                             |
| 1140                                   | 1150                                   | 2.3032523D 22                                                                | 3.9967190D 03                                             |
| 1150                                   | 1160                                   | 2.3241435D 22                                                                | 3.9980540D 03                                             |
| 1160                                   | 1170                                   | 2.3441937D 22                                                                | 3.9979319D 03                                             |
| 1170                                   | 1180                                   | 2.3634112D 22                                                                | 3.9964036D 03                                             |
| 1180                                   | 1190                                   | 2.3818046D 22                                                                | 3.9935195D 03                                             |
| 1190                                   | 1200                                   | 2.3993835D 22                                                                | 3.9893293D 03                                             |
| 1200                                   | 1210                                   | 2.4161579D 22                                                                | 3.9838822D 03                                             |
| 1210                                   | 1220                                   | 2.4321386D 22                                                                | 3.9772266D 03                                             |
| 1220                                   | 1230                                   | 2.4473365D 22                                                                | 3.9694102D 03                                             |
| 1230                                   | 1240                                   | 2.4617634D 22                                                                | 3.9604799D 03                                             |
| 1240                                   | 1250                                   | 2.4754312D 22                                                                | 3.9504816D 03                                             |
| 1250                                   | 1260                                   | 2.4883523D 22                                                                | 3.9394604D 03                                             |
| 1260                                   | 1270                                   | 2.5005393D 22                                                                | 3.9274605D 03                                             |
| 1270                                   | 1280                                   | 2.5120052D 22                                                                | 3.9145250D 03                                             |
| 1280                                   | 1290                                   | 2.5227631D 22                                                                | 3.9006963D 03                                             |
| 1290                                   | 1300                                   | 2.5328265D 22                                                                | 3.8860154D 03                                             |
| 1300                                   | 1310                                   | 2.5422088D 22                                                                | 3.8705225D 03                                             |

R.K.H. Gebel. Blackbody functions.  
Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 2.55092370 22                                                                  | 3.85425690 03                                              |
| 1320                                           | 1330                                           | 2.55898500 22                                                                  | 3.83725670 03                                              |
| 1330                                           | 1340                                           | 2.56640650 22                                                                  | 3.81955900 03                                              |
| 1340                                           | 1350                                           | 2.57320220 22                                                                  | 3.80119990 03                                              |
| 1350                                           | 1360                                           | 2.57938590 22                                                                  | 3.78221440 03                                              |
| 1360                                           | 1370                                           | 2.58497150 22                                                                  | 3.76263650 03                                              |
| 1370                                           | 1380                                           | 2.58997300 22                                                                  | 3.74249930 03                                              |
| 1380                                           | 1390                                           | 2.59440410 22                                                                  | 3.72183470 03                                              |
| 1390                                           | 1400                                           | 2.59827880 22                                                                  | 3.70067370 03                                              |
| 1400                                           | 1410                                           | 2.60161060 22                                                                  | 3.67904640 03                                              |
| 1410                                           | 1420                                           | 2.60441330 22                                                                  | 3.65698170 03                                              |
| 1420                                           | 1430                                           | 2.60670040 22                                                                  | 3.63450770 03                                              |
| 1430                                           | 1440                                           | 2.60848530 22                                                                  | 3.61165160 03                                              |
| 1440                                           | 1450                                           | 2.60978120 22                                                                  | 3.58843960 03                                              |
| 1450                                           | 1460                                           | 2.61060130 22                                                                  | 3.56489690 03                                              |
| 1460                                           | 1470                                           | 2.61095860 22                                                                  | 3.54104790 03                                              |
| 1470                                           | 1480                                           | 2.61086600 22                                                                  | 3.51691610 03                                              |
| 1480                                           | 1490                                           | 2.61033610 22                                                                  | 3.49252430 03                                              |
| 1490                                           | 1500                                           | 2.60938130 22                                                                  | 3.46789420 03                                              |
| 1500                                           | 1510                                           | 2.60801410 22                                                                  | 3.44304690 03                                              |
| 1510                                           | 1520                                           | 2.60624650 22                                                                  | 3.41800250 03                                              |
| 1520                                           | 1530                                           | 2.60409050 22                                                                  | 3.39278040 03                                              |
| 1530                                           | 1540                                           | 2.60155780 22                                                                  | 3.36739950 03                                              |
| 1540                                           | 1550                                           | 2.59866000 22                                                                  | 3.34187760 03                                              |
| 1550                                           | 1560                                           | 2.59540850 22                                                                  | 3.31623180 03                                              |
| 1560                                           | 1570                                           | 2.59181430 22                                                                  | 3.29047890 03                                              |
| 1570                                           | 1580                                           | 2.58788840 22                                                                  | 3.26463450 03                                              |
| 1580                                           | 1590                                           | 2.58364160 22                                                                  | 3.23871390 03                                              |
| 1590                                           | 1600                                           | 2.57908440 22                                                                  | 3.21273170 03                                              |
| 1600                                           | 1610                                           | 2.57422700 22                                                                  | 3.18670170 03                                              |
| 1610                                           | 1620                                           | 2.56907970 22                                                                  | 3.16063730 03                                              |
| 1620                                           | 1630                                           | 2.56365230 22                                                                  | 3.13455120 03                                              |
| 1630                                           | 1640                                           | 2.55795450 22                                                                  | 3.10845560 03                                              |
| 1640                                           | 1650                                           | 2.55199580 22                                                                  | 3.08236220 03                                              |
| 1650                                           | 1660                                           | 2.54578550 22                                                                  | 3.05628200 03                                              |
| 1660                                           | 1670                                           | 2.53933260 22                                                                  | 3.03022560 03                                              |
| 1670                                           | 1680                                           | 2.53264600 22                                                                  | 3.00420320 03                                              |
| 1680                                           | 1690                                           | 2.52573440 22                                                                  | 2.97822430 03                                              |
| 1690                                           | 1700                                           | 2.51860630 22                                                                  | 2.95229820 03                                              |
| 1700                                           | 1710                                           | 2.51126990 22                                                                  | 2.92643340 03                                              |
| 1710                                           | 1720                                           | 2.50373330 22                                                                  | 2.90063830 03                                              |
| 1720                                           | 1730                                           | 2.49600440 22                                                                  | 2.87492080 03                                              |
| 1730                                           | 1740                                           | 2.48809090 22                                                                  | 2.84928830 03                                              |
| 1740                                           | 1750                                           | 2.48000020 22                                                                  | 2.82374790 03                                              |
| 1750                                           | 1760                                           | 2.47173980 22                                                                  | 2.79830630 03                                              |
| 1760                                           | 1770                                           | 2.46331660 22                                                                  | 2.77296980 03                                              |
| 1770                                           | 1780                                           | 2.45473770 22                                                                  | 2.74774450 03                                              |
| 1780                                           | 1790                                           | 2.44600970 22                                                                  | 2.72263600 03                                              |
| 1790                                           | 1800                                           | 2.43713940 22                                                                  | 2.69764960 03                                              |
| 1800                                           | 1810                                           | 2.42813320 22                                                                  | 2.67279050 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 2500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 2.41899720 22                                                                  | 2.64806320 03                                              |
| 1820                                           | 1830                                           | 2.40973750 22                                                                  | 2.62347230 03                                              |
| 1830                                           | 1840                                           | 2.40036020 22                                                                  | 2.59902200 03                                              |
| 1840                                           | 1850                                           | 2.39087090 22                                                                  | 2.57471610 03                                              |
| 1850                                           | 1860                                           | 2.38127520 22                                                                  | 2.55055840 03                                              |
| 1860                                           | 1870                                           | 2.37157860 22                                                                  | 2.52655230 03                                              |
| 1870                                           | 1880                                           | 2.36178640 22                                                                  | 2.50270080 03                                              |
| 1880                                           | 1890                                           | 2.35190370 22                                                                  | 2.47900710 03                                              |
| 1890                                           | 1900                                           | 2.34193550 22                                                                  | 2.45547380 03                                              |
| 1900                                           | 1910                                           | 2.33188680 22                                                                  | 2.43210350 03                                              |
| 1910                                           | 1920                                           | 2.32176210 22                                                                  | 2.40889850 03                                              |
| 1920                                           | 1930                                           | 2.31156610 22                                                                  | 2.38586100 03                                              |
| 1930                                           | 1940                                           | 2.30130320 22                                                                  | 2.36299300 03                                              |
| 1940                                           | 1950                                           | 2.29097770 22                                                                  | 2.34029610 03                                              |
| 1950                                           | 1960                                           | 2.28059390 22                                                                  | 2.31777220 03                                              |
| 1960                                           | 1970                                           | 2.27015580 22                                                                  | 2.29542260 03                                              |
| 1970                                           | 1980                                           | 2.25966740 22                                                                  | 2.27324870 03                                              |
| 1980                                           | 1990                                           | 2.24913240 22                                                                  | 2.25125160 03                                              |
| 1990                                           | 2000                                           | 2.23855450 22                                                                  | 2.22943240 03                                              |
| 2000                                           | 2010                                           | 2.22793750 22                                                                  | 2.20779190 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 2.17967740 23                                                                  | 2.11338870 04                                              |
| 2100                                           | 2200                                           | 2.07153660 23                                                                  | 1.91508610 04                                              |
| 2200                                           | 2300                                           | 1.96368770 23                                                                  | 1.73467000 04                                              |
| 2300                                           | 2400                                           | 1.85792710 23                                                                  | 1.57137760 04                                              |
| 2400                                           | 2500                                           | 1.75547940 23                                                                  | 1.42410590 04                                              |
| 2500                                           | 2600                                           | 1.65714050 23                                                                  | 1.29159060 04                                              |
| 2600                                           | 2700                                           | 1.55338950 23                                                                  | 1.17252040 04                                              |
| 2700                                           | 2800                                           | 1.47447390 23                                                                  | 1.06560730 04                                              |
| 2800                                           | 2900                                           | 1.39047490 23                                                                  | 9.69627900 03                                              |
| 2900                                           | 3000                                           | 1.31135600 23                                                                  | 8.83445420 03                                              |
| 3000                                           | 3200                                           | 2.40423330 23                                                                  | 1.54242650 04                                              |
| 3200                                           | 3400                                           | 2.14248420 23                                                                  | 1.29108610 04                                              |
| 3400                                           | 3600                                           | 1.91306150 23                                                                  | 1.08687280 04                                              |
| 3600                                           | 3800                                           | 1.71222740 23                                                                  | 9.20126970 03                                              |
| 3800                                           | 4000                                           | 1.53639060 23                                                                  | 7.83246810 03                                              |
| 4000                                           | 4200                                           | 1.38226890 23                                                                  | 6.70265420 03                                              |
| 4200                                           | 4400                                           | 1.24694710 23                                                                  | 5.76496670 03                                              |
| 4400                                           | 4600                                           | 1.12787880 23                                                                  | 4.98251320 03                                              |
| 4600                                           | 4800                                           | 1.02286190 23                                                                  | 4.32614390 03                                              |
| 4800                                           | 5000                                           | 9.30003550 22                                                                  | 3.77272630 03                                              |
| 5000                                           | 5500                                           | 1.98453180 23                                                                  | 7.52953350 03                                              |
| 5500                                           | 6000                                           | 1.59679860 23                                                                  | 5.52949840 03                                              |
| 6000                                           | 6500                                           | 1.30204780 23                                                                  | 4.14685390 03                                              |
| 6500                                           | 7000                                           | 1.07455210 23                                                                  | 3.16803160 03                                              |
| 7000                                           | 7500                                           | 8.96477330 22                                                                  | 2.46025740 03                                              |
| 7500                                           | 8000                                           | 7.55274570 22                                                                  | 1.93870110 03                                              |
| 8000                                           | 8500                                           | 6.41977380 22                                                                  | 1.54779590 03                                              |
| 8500                                           | 9000                                           | 5.50082650 22                                                                  | 1.25030900 03                                              |
| 9000                                           | 9500                                           | 4.74806260 22                                                                  | 1.02077320 03                                              |
| 9500                                           | 10000                                          | 4.12581220 22                                                                  | 8.41438820 02                                              |
| 10000                                          | 11000                                          | 6.77863500 22                                                                  | 1.28628290 03                                              |
| 11000                                          | 12000                                          | 5.29213590 22                                                                  | 9.16477880 02                                              |
| 12000                                          | 13000                                          | 4.20914680 22                                                                  | 6.70380480 02                                              |
| 13000                                          | 14000                                          | 3.40190690 22                                                                  | 5.01540190 02                                              |
| 14000                                          | 15000                                          | 2.78815300 22                                                                  | 3.82620930 02                                              |
| 15000                                          | 16000                                          | 2.31333350 22                                                                  | 2.96925410 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 1.03158430 20                                                                | 6.71361990 01                                             |
| 310                                    | 320                                    | 1.49256760 20                                                                | 9.40631040 01                                             |
| 320                                    | 330                                    | 2.10294260 20                                                                | 1.28463080 02                                             |
| 330                                    | 340                                    | 2.89243500 20                                                                | 1.71429980 02                                             |
| 340                                    | 350                                    | 3.89219040 20                                                                | 2.24012670 02                                             |
| 350                                    | 360                                    | 5.13406310 20                                                                | 2.87181610 02                                             |
| 360                                    | 370                                    | 6.64987190 20                                                                | 3.61799010 02                                             |
| 370                                    | 380                                    | 8.47065780 20                                                                | 4.48593950 02                                             |
| 380                                    | 390                                    | 1.06259750 21                                                                | 5.48143110 02                                             |
| 390                                    | 400                                    | 1.31432440 21                                                                | 6.60857360 02                                             |
| 400                                    | 410                                    | 1.60471770 21                                                                | 7.86974320 02                                             |
| 410                                    | 420                                    | 1.93593090 21                                                                | 9.26556340 02                                             |
| 420                                    | 430                                    | 2.30976130 21                                                                | 1.07949360 03                                             |
| 430                                    | 440                                    | 2.72762350 21                                                                | 1.24551150 03                                             |
| 440                                    | 450                                    | 3.19053200 21                                                                | 1.42418140 03                                             |
| 450                                    | 460                                    | 3.69909390 21                                                                | 1.61493450 03                                             |
| 460                                    | 470                                    | 4.25351000 21                                                                | 1.81707710 03                                             |
| 470                                    | 480                                    | 4.85358420 21                                                                | 2.02980810 03                                             |
| 480                                    | 490                                    | 5.49873930 21                                                                | 2.25223630 03                                             |
| 490                                    | 500                                    | 6.18803850 21                                                                | 2.48339800 03                                             |
| 500                                    | 510                                    | 6.92021140 21                                                                | 2.72227460 03                                             |
| 510                                    | 520                                    | 7.69368290 21                                                                | 2.96780910 03                                             |
| 520                                    | 530                                    | 8.50660540 21                                                                | 3.21892190 03                                             |
| 530                                    | 540                                    | 9.35589120 21                                                                | 3.47452490 03                                             |
| 540                                    | 550                                    | 1.02422470 22                                                                | 3.73353460 03                                             |
| 550                                    | 560                                    | 1.11602060 22                                                                | 3.99488400 03                                             |
| 560                                    | 570                                    | 1.21081620 22                                                                | 4.25753240 03                                             |
| 570                                    | 580                                    | 1.30834010 22                                                                | 4.52047390 03                                             |
| 580                                    | 590                                    | 1.40831300 22                                                                | 4.78274510 03                                             |
| 590                                    | 600                                    | 1.51045070 22                                                                | 5.04343050 03                                             |
| 600                                    | 610                                    | 1.61446670 22                                                                | 5.30166770 03                                             |
| 610                                    | 620                                    | 1.72007430 22                                                                | 5.55665000 03                                             |
| 620                                    | 630                                    | 1.82698920 22                                                                | 5.80762960 03                                             |
| 630                                    | 640                                    | 1.93493110 22                                                                | 6.05391880 03                                             |
| 640                                    | 650                                    | 2.04362560 22                                                                | 6.29489010 03                                             |
| 650                                    | 660                                    | 2.15280570 22                                                                | 6.52997710 03                                             |
| 660                                    | 670                                    | 2.26221280 22                                                                | 6.75867270 03                                             |
| 670                                    | 680                                    | 2.37159810 22                                                                | 6.98052860 03                                             |
| 680                                    | 690                                    | 2.48072340 22                                                                | 7.19515310 03                                             |
| 690                                    | 700                                    | 2.58936160 22                                                                | 7.40220930 03                                             |
| 700                                    | 710                                    | 2.69729750 22                                                                | 7.60141270 03                                             |
| 710                                    | 720                                    | 2.80432810 22                                                                | 7.79252840 03                                             |
| 720                                    | 730                                    | 2.91026270 22                                                                | 7.97536860 03                                             |
| 730                                    | 740                                    | 3.01492330 22                                                                | 8.14978970 03                                             |
| 740                                    | 750                                    | 3.11814440 22                                                                | 8.31568950 03                                             |
| 750                                    | 760                                    | 3.21977310 22                                                                | 8.47300400 03                                             |
| 760                                    | 770                                    | 3.31966880 22                                                                | 8.62170480 03                                             |
| 770                                    | 780                                    | 3.41770310 22                                                                | 8.76179610 03                                             |
| 780                                    | 790                                    | 3.51375940 22                                                                | 8.89331200 03                                             |
| 790                                    | 800                                    | 3.60773280 22                                                                | 9.01631340 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 800                                            | 810                                            | 3.69952950 22                                                                  | 9.13088620 03                                              |
| 810                                            | 820                                            | 3.78906620 22                                                                  | 9.23713790 03                                              |
| 820                                            | 830                                            | 3.87627020 22                                                                  | 9.33519590 03                                              |
| 830                                            | 840                                            | 3.96107860 22                                                                  | 9.42520470 03                                              |
| 840                                            | 850                                            | 4.04343790 22                                                                  | 9.50732420 03                                              |
| 850                                            | 860                                            | 4.12330340 22                                                                  | 9.58172750 03                                              |
| 860                                            | 870                                            | 4.20063900 22                                                                  | 9.64859920 03                                              |
| 870                                            | 880                                            | 4.27541630 22                                                                  | 9.70813320 03                                              |
| 880                                            | 890                                            | 4.34761460 22                                                                  | 9.76053180 03                                              |
| 890                                            | 900                                            | 4.41722020 22                                                                  | 9.80600340 03                                              |
| 900                                            | 910                                            | 4.48422580 22                                                                  | 9.84476180 03                                              |
| 910                                            | 920                                            | 4.54863030 22                                                                  | 9.87702460 03                                              |
| 920                                            | 930                                            | 4.61043810 22                                                                  | 9.90301220 03                                              |
| 930                                            | 940                                            | 4.66965900 22                                                                  | 9.92294660 03                                              |
| 940                                            | 950                                            | 4.72630750 22                                                                  | 9.93705040 03                                              |
| 950                                            | 960                                            | 4.78040260 22                                                                  | 9.94554620 03                                              |
| 960                                            | 970                                            | 4.83196720 22                                                                  | 9.94865580 03                                              |
| 970                                            | 980                                            | 4.88102800 22                                                                  | 9.94659910 03                                              |
| 980                                            | 990                                            | 4.92761500 22                                                                  | 9.93959400 03                                              |
| 990                                            | 1000                                           | 4.97176130 22                                                                  | 9.92785570 03                                              |
| 1000                                           | 1010                                           | 5.01350240 22                                                                  | 9.91159600 03                                              |
| 1010                                           | 1020                                           | 5.05287660 22                                                                  | 9.89102320 03                                              |
| 1020                                           | 1030                                           | 5.08992400 22                                                                  | 9.86634160 03                                              |
| 1030                                           | 1040                                           | 5.12468690 22                                                                  | 9.83775110 03                                              |
| 1040                                           | 1050                                           | 5.15720900 22                                                                  | 9.80544710 03                                              |
| 1050                                           | 1060                                           | 5.18753530 22                                                                  | 9.76962030 03                                              |
| 1060                                           | 1070                                           | 5.21571240 22                                                                  | 9.73045630 03                                              |
| 1070                                           | 1080                                           | 5.24178740 22                                                                  | 9.68813590 03                                              |
| 1080                                           | 1090                                           | 5.26580870 22                                                                  | 9.64283440 03                                              |
| 1090                                           | 1100                                           | 5.28782480 22                                                                  | 9.59472210 03                                              |
| 1100                                           | 1110                                           | 5.30788520 22                                                                  | 9.54396380 03                                              |
| 1110                                           | 1120                                           | 5.32603940 22                                                                  | 9.49071920 03                                              |
| 1120                                           | 1130                                           | 5.34233710 22                                                                  | 9.43514240 03                                              |
| 1130                                           | 1140                                           | 5.35682830 22                                                                  | 9.37738230 03                                              |
| 1140                                           | 1150                                           | 5.36956280 22                                                                  | 9.31758270 03                                              |
| 1150                                           | 1160                                           | 5.38059020 22                                                                  | 9.25588200 03                                              |
| 1160                                           | 1170                                           | 5.38996000 22                                                                  | 9.19241330 03                                              |
| 1170                                           | 1180                                           | 5.39772120 22                                                                  | 9.12730500 03                                              |
| 1180                                           | 1190                                           | 5.40392260 22                                                                  | 9.06068010 03                                              |
| 1190                                           | 1200                                           | 5.40861240 22                                                                  | 8.99265690 03                                              |
| 1200                                           | 1210                                           | 5.41183830 22                                                                  | 8.92334880 03                                              |
| 1210                                           | 1220                                           | 5.41364730 22                                                                  | 8.85286470 03                                              |
| 1220                                           | 1230                                           | 5.41408590 22                                                                  | 8.78130850 03                                              |
| 1230                                           | 1240                                           | 5.41319990 22                                                                  | 8.70878000 03                                              |
| 1240                                           | 1250                                           | 5.41103430 22                                                                  | 8.63537450 03                                              |
| 1250                                           | 1260                                           | 5.40763330 22                                                                  | 8.56118290 03                                              |
| 1260                                           | 1270                                           | 5.40304040 22                                                                  | 8.48629220 03                                              |
| 1270                                           | 1280                                           | 5.39729820 22                                                                  | 8.41078520 03                                              |
| 1280                                           | 1290                                           | 5.39044860 22                                                                  | 8.33474120 03                                              |
| 1290                                           | 1300                                           | 5.38253250 22                                                                  | 8.25823520 03                                              |
| 1300                                           | 1310                                           | 5.37359000 22                                                                  | 8.18133900 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 5.36366040 22                                                                | 8.10412070 03                                             |
| 1320                                   | 1330                                   | 5.35278180 22                                                                | 8.02664510 03                                             |
| 1330                                   | 1340                                   | 5.34099180 22                                                                | 7.94897360 03                                             |
| 1340                                   | 1350                                   | 5.32832680 22                                                                | 7.87116450 03                                             |
| 1350                                   | 1360                                   | 5.31482260 22                                                                | 7.79327320 03                                             |
| 1360                                   | 1370                                   | 5.30051380 22                                                                | 7.71535210 03                                             |
| 1370                                   | 1380                                   | 5.28543420 22                                                                | 7.63745060 03                                             |
| 1380                                   | 1390                                   | 5.26961690 22                                                                | 7.55961570 03                                             |
| 1390                                   | 1400                                   | 5.25309400 22                                                                | 7.48189160 03                                             |
| 1400                                   | 1410                                   | 5.23589650 22                                                                | 7.40432010 03                                             |
| 1410                                   | 1420                                   | 5.21805500 22                                                                | 7.32694050 03                                             |
| 1420                                   | 1430                                   | 5.19959880 22                                                                | 7.24979000 03                                             |
| 1430                                   | 1440                                   | 5.18055660 22                                                                | 7.17290340 03                                             |
| 1440                                   | 1450                                   | 5.16095630 22                                                                | 7.09631340 03                                             |
| 1450                                   | 1460                                   | 5.14082480 22                                                                | 7.02005090 03                                             |
| 1460                                   | 1470                                   | 5.12018830 22                                                                | 6.94414470 03                                             |
| 1470                                   | 1480                                   | 5.09907230 22                                                                | 6.86862170 03                                             |
| 1480                                   | 1490                                   | 5.07750140 22                                                                | 6.79350720 03                                             |
| 1490                                   | 1500                                   | 5.05549940 22                                                                | 6.71882470 03                                             |
| 1500                                   | 1510                                   | 5.03308950 22                                                                | 6.64459610 03                                             |
| 1510                                   | 1520                                   | 5.01029400 22                                                                | 6.57084180 03                                             |
| 1520                                   | 1530                                   | 4.98713470 22                                                                | 6.49758070 03                                             |
| 1530                                   | 1540                                   | 4.96363260 22                                                                | 6.42483030 03                                             |
| 1540                                   | 1550                                   | 4.93980780 22                                                                | 6.35260680 03                                             |
| 1550                                   | 1560                                   | 4.91568000 22                                                                | 6.28092510 03                                             |
| 1560                                   | 1570                                   | 4.89126830 22                                                                | 6.20979900 03                                             |
| 1570                                   | 1580                                   | 4.86659090 22                                                                | 6.13924080 03                                             |
| 1580                                   | 1590                                   | 4.84166560 22                                                                | 6.06926220 03                                             |
| 1590                                   | 1600                                   | 4.81650940 22                                                                | 5.99987350 03                                             |
| 1600                                   | 1610                                   | 4.79113880 22                                                                | 5.93108410 03                                             |
| 1610                                   | 1620                                   | 4.76556990 22                                                                | 5.86290250 03                                             |
| 1620                                   | 1630                                   | 4.73981800 22                                                                | 5.79533620 03                                             |
| 1630                                   | 1640                                   | 4.71389780 22                                                                | 5.72839210 03                                             |
| 1640                                   | 1650                                   | 4.68782380 22                                                                | 5.66207610 03                                             |
| 1650                                   | 1660                                   | 4.66160970 22                                                                | 5.59639320 03                                             |
| 1660                                   | 1670                                   | 4.63526880 22                                                                | 5.53134800 03                                             |
| 1670                                   | 1680                                   | 4.60881380 22                                                                | 5.46694420 03                                             |
| 1680                                   | 1690                                   | 4.58225720 22                                                                | 5.40318500 03                                             |
| 1690                                   | 1700                                   | 4.55561070 22                                                                | 5.34007270 03                                             |
| 1700                                   | 1710                                   | 4.52888580 22                                                                | 5.27760940 03                                             |
| 1710                                   | 1720                                   | 4.50209350 22                                                                | 5.21579640 03                                             |
| 1720                                   | 1730                                   | 4.47524440 22                                                                | 5.15463470 03                                             |
| 1730                                   | 1740                                   | 4.44834850 22                                                                | 5.09412440 03                                             |
| 1740                                   | 1750                                   | 4.42141570 22                                                                | 5.03426560 03                                             |
| 1750                                   | 1760                                   | 4.39445530 22                                                                | 4.97505780 03                                             |
| 1760                                   | 1770                                   | 4.36747630 22                                                                | 4.91649990 03                                             |
| 1770                                   | 1780                                   | 4.34048750 22                                                                | 4.85859080 03                                             |
| 1780                                   | 1790                                   | 4.31349700 22                                                                | 4.80132870 03                                             |
| 1790                                   | 1800                                   | 4.28651290 22                                                                | 4.74471170 03                                             |
| 1800                                   | 1810                                   | 4.25954270 22                                                                | 4.68873730 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 4.23259380 22                                                                | 4.63340310 03                                             |
| 1820                                   | 1830                                   | 4.20567310 22                                                                | 4.57870600 03                                             |
| 1830                                   | 1840                                   | 4.17878750 22                                                                | 4.52464300 03                                             |
| 1840                                   | 1850                                   | 4.15194340 22                                                                | 4.47121070 03                                             |
| 1850                                   | 1860                                   | 4.12514680 22                                                                | 4.41840550 03                                             |
| 1860                                   | 1870                                   | 4.09840360 22                                                                | 4.36622340 03                                             |
| 1870                                   | 1880                                   | 4.07171960 22                                                                | 4.31466060 03                                             |
| 1880                                   | 1890                                   | 4.04509990 22                                                                | 4.26371270 03                                             |
| 1890                                   | 1900                                   | 4.01854990 22                                                                | 4.21337560 03                                             |
| 1900                                   | 1910                                   | 3.99207430 22                                                                | 4.16364450 03                                             |
| 1910                                   | 1920                                   | 3.96567780 22                                                                | 4.11451490 03                                             |
| 1920                                   | 1930                                   | 3.93936490 22                                                                | 4.06598210 03                                             |
| 1930                                   | 1940                                   | 3.91313970 22                                                                | 4.01804100 03                                             |
| 1940                                   | 1950                                   | 3.88700640 22                                                                | 3.97068670 03                                             |
| 1950                                   | 1960                                   | 3.86096880 22                                                                | 3.92391400 03                                             |
| 1960                                   | 1970                                   | 3.83503050 22                                                                | 3.87771780 03                                             |
| 1970                                   | 1980                                   | 3.80919500 22                                                                | 3.83209290 03                                             |
| 1980                                   | 1990                                   | 3.78346540 22                                                                | 3.78703370 03                                             |
| 1990                                   | 2000                                   | 3.75784510 22                                                                | 3.74253500 03                                             |
| 2000                                   | 2010                                   | 3.73233690 22                                                                | 3.69859130 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 3.61952580 23                                                                | 3.50972580 04                                             |
| 2100                                   | 2200                                   | 3.37707440 23                                                                | 3.12223600 04                                             |
| 2200                                   | 2300                                   | 3.14857260 23                                                                | 2.78152840 04                                             |
| 2300                                   | 2400                                   | 2.93465970 23                                                                | 2.48217050 04                                             |
| 2400                                   | 2500                                   | 2.73536630 23                                                                | 2.21912220 04                                             |
| 2500                                   | 2600                                   | 2.55032780 23                                                                | 1.98782600 04                                             |
| 2600                                   | 2700                                   | 2.37893400 23                                                                | 1.78422840 04                                             |
| 2700                                   | 2800                                   | 2.22043340 23                                                                | 1.60476320 04                                             |
| 2800                                   | 2900                                   | 2.07400360 23                                                                | 1.44631570 04                                             |
| 2900                                   | 3000                                   | 1.93879940 23                                                                | 1.30617810 04                                             |
| 3000                                   | 3200                                   | 3.51273480 23                                                                | 2.25376500 04                                             |
| 3200                                   | 3400                                   | 3.08633510 23                                                                | 1.85998520 04                                             |
| 3400                                   | 3600                                   | 2.72210910 23                                                                | 1.54660390 04                                             |
| 3600                                   | 3800                                   | 2.41014230 23                                                                | 1.29523570 04                                             |
| 3800                                   | 4000                                   | 2.14205610 23                                                                | 1.09205500 04                                             |
| 4000                                   | 4200                                   | 1.91084700 23                                                                | 9.26604420 03                                             |
| 4200                                   | 4400                                   | 1.71069280 23                                                                | 7.90920690 03                                             |
| 4400                                   | 4600                                   | 1.53676350 23                                                                | 6.78896440 03                                             |
| 4600                                   | 4800                                   | 1.38505200 23                                                                | 5.85813150 03                                             |
| 4800                                   | 5000                                   | 1.25222960 23                                                                | 5.07798670 03                                             |
| 5000                                   | 5500                                   | 2.64964480 23                                                                | 1.00539670 04                                             |
| 5500                                   | 6000                                   | 2.10971420 23                                                                | 7.30615510 03                                             |
| 6000                                   | 6500                                   | 1.70549040 23                                                                | 5.43205030 03                                             |
| 6500                                   | 7000                                   | 1.39736410 23                                                                | 4.11992540 03                                             |
| 7000                                   | 7500                                   | 1.15865800 23                                                                | 3.17987930 03                                             |
| 7500                                   | 8000                                   | 9.71023480 22                                                                | 2.49256870 03                                             |
| 8000                                   | 8500                                   | 8.21589950 22                                                                | 1.98088130 03                                             |
| 8500                                   | 9000                                   | 7.01164580 22                                                                | 1.59373880 03                                             |
| 9000                                   | 9500                                   | 6.03070990 22                                                                | 1.29654550 03                                             |
| 9500                                   | 10000                                  | 5.22385770 22                                                                | 1.06539330 03                                             |
| 10000                                  | 11000                                  | 8.54832320 22                                                                | 1.62215630 03                                             |
| 11000                                  | 12000                                  | 6.64284730 22                                                                | 1.15042530 03                                             |
| 12000                                  | 13000                                  | 5.26314940 22                                                                | 8.38268470 02                                             |
| 13000                                  | 14000                                  | 4.23999440 22                                                                | 6.25110190 02                                             |
| 14000                                  | 15000                                  | 3.46542240 22                                                                | 4.75570270 02                                             |
| 15000                                  | 16000                                  | 2.86839000 22                                                                | 3.68173490 02                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 9.73302560 20                                                                | 6.33558430 02                                             |
| 310                                    | 320                                    | 1.31165680 21                                                                | 8.25769300 72                                             |
| 320                                    | 330                                    | 1.72880080 21                                                                | 1.05525240 03                                             |
| 330                                    | 340                                    | 2.23322920 21                                                                | 1.32379910 03                                             |
| 340                                    | 350                                    | 2.83262030 21                                                                | 1.63052330 03                                             |
| 350                                    | 360                                    | 3.53362750 21                                                                | 1.97683950 03                                             |
| 360                                    | 370                                    | 4.34171440 21                                                                | 2.36246930 03                                             |
| 370                                    | 380                                    | 5.26103950 21                                                                | 2.78647230 03                                             |
| 380                                    | 390                                    | 6.29438730 21                                                                | 3.24729660 03                                             |
| 390                                    | 400                                    | 7.44314440 21                                                                | 3.74284420 03                                             |
| 400                                    | 410                                    | 8.70731540 21                                                                | 4.27054620 03                                             |
| 410                                    | 420                                    | 1.00855730 22                                                                | 4.82744350 03                                             |
| 420                                    | 430                                    | 1.15753380 22                                                                | 5.41026950 03                                             |
| 430                                    | 440                                    | 1.31728760 22                                                                | 6.01553160 03                                             |
| 440                                    | 450                                    | 1.48734210 22                                                                | 6.63958860 03                                             |
| 450                                    | 460                                    | 1.66712960 22                                                                | 7.27872290 03                                             |
| 460                                    | 470                                    | 1.85600500 22                                                                | 7.92920520 03                                             |
| 470                                    | 480                                    | 2.05325910 22                                                                | 8.58735240 03                                             |
| 480                                    | 490                                    | 2.25813210 22                                                                | 9.24957700 03                                             |
| 490                                    | 500                                    | 2.46982590 22                                                                | 9.91242850 03                                             |
| 500                                    | 510                                    | 2.68751650 22                                                                | 1.05726280 04                                             |
| 510                                    | 520                                    | 2.91036510 22                                                                | 1.12270920 04                                             |
| 520                                    | 530                                    | 3.13752810 22                                                                | 1.18729570 04                                             |
| 530                                    | 540                                    | 3.36816640 22                                                                | 1.25075870 04                                             |
| 540                                    | 550                                    | 3.60145360 22                                                                | 1.31285890 04                                             |
| 550                                    | 560                                    | 3.83658250 22                                                                | 1.37338080 04                                             |
| 560                                    | 570                                    | 4.07277170 22                                                                | 1.43213350 04                                             |
| 570                                    | 580                                    | 4.30927000 22                                                                | 1.48894970 04                                             |
| 580                                    | 590                                    | 4.54536080 22                                                                | 1.54368520 04                                             |
| 590                                    | 600                                    | 4.78036510 22                                                                | 1.59621830 04                                             |
| 600                                    | 610                                    | 5.01364400 22                                                                | 1.64644810 04                                             |
| 610                                    | 620                                    | 5.24460000 22                                                                | 1.69429420 04                                             |
| 620                                    | 630                                    | 5.47267870 22                                                                | 1.73969450 04                                             |
| 630                                    | 640                                    | 5.69736850 22                                                                | 1.78260460 04                                             |
| 640                                    | 650                                    | 5.91820100 22                                                                | 1.82299600 04                                             |
| 650                                    | 660                                    | 6.13475070 22                                                                | 1.86085490 04                                             |
| 660                                    | 670                                    | 6.34663390 22                                                                | 1.89618100 04                                             |
| 670                                    | 680                                    | 6.55350760 22                                                                | 1.92898580 04                                             |
| 680                                    | 690                                    | 6.75506840 22                                                                | 1.95929170 04                                             |
| 690                                    | 700                                    | 6.95105080 22                                                                | 1.98713070 04                                             |
| 700                                    | 710                                    | 7.14122550 22                                                                | 2.01254320 04                                             |
| 710                                    | 720                                    | 7.32539790 22                                                                | 2.03557680 04                                             |
| 720                                    | 730                                    | 7.50340580 22                                                                | 2.05628560 04                                             |
| 730                                    | 740                                    | 7.67511800 22                                                                | 2.07472890 04                                             |
| 740                                    | 750                                    | 7.84043170 22                                                                | 2.09097070 04                                             |
| 750                                    | 760                                    | 7.99927140 22                                                                | 2.10507830 04                                             |
| 760                                    | 770                                    | 8.15158640 22                                                                | 2.11712250 04                                             |
| 770                                    | 780                                    | 8.29734880 22                                                                | 2.12717590 04                                             |
| 780                                    | 790                                    | 8.43655260 22                                                                | 2.13531310 04                                             |
| 790                                    | 800                                    | 8.56921070 22                                                                | 2.14160960 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 800                                            | 810                                            | 8.69535420 22                                                                  | 2.14614160 04                                              |
| 810                                            | 820                                            | 8.81503010 22                                                                  | 2.14898570 04                                              |
| 820                                            | 830                                            | 8.92830030 22                                                                  | 2.15021810 04                                              |
| 830                                            | 840                                            | 9.03523960 22                                                                  | 2.14991440 04                                              |
| 840                                            | 850                                            | 9.13593460 22                                                                  | 2.14814960 04                                              |
| 850                                            | 860                                            | 9.23048240 22                                                                  | 2.14499750 04                                              |
| 860                                            | 870                                            | 9.31898930 22                                                                  | 2.14053070 04                                              |
| 870                                            | 880                                            | 9.40156950 22                                                                  | 2.13482010 04                                              |
| 880                                            | 890                                            | 9.47834420 22                                                                  | 2.12793520 04                                              |
| 890                                            | 900                                            | 9.54944060 22                                                                  | 2.11994350 04                                              |
| 900                                            | 910                                            | 9.61497090 22                                                                  | 2.11091070 04                                              |
| 910                                            | 920                                            | 9.67513130 22                                                                  | 2.10090060 04                                              |
| 920                                            | 930                                            | 9.73000160 22                                                                  | 2.08997490 04                                              |
| 930                                            | 940                                            | 9.77974400 22                                                                  | 2.07819310 04                                              |
| 940                                            | 950                                            | 9.82450270 22                                                                  | 2.06561290 04                                              |
| 950                                            | 960                                            | 9.86442350 22                                                                  | 2.05228950 04                                              |
| 960                                            | 970                                            | 9.89965260 22                                                                  | 2.03827620 04                                              |
| 970                                            | 980                                            | 9.93033670 22                                                                  | 2.02362420 04                                              |
| 980                                            | 990                                            | 9.95662240 22                                                                  | 2.00838240 04                                              |
| 990                                            | 1000                                           | 9.97865540 22                                                                  | 1.99259770 04                                              |
| 1000                                           | 1010                                           | 9.99658080 22                                                                  | 1.97631510 04                                              |
| 1010                                           | 1020                                           | 1.00105420 23                                                                  | 1.95957730 04                                              |
| 1020                                           | 1030                                           | 1.00206820 23                                                                  | 1.94242530 04                                              |
| 1030                                           | 1040                                           | 1.00271400 23                                                                  | 1.92489790 04                                              |
| 1040                                           | 1050                                           | 1.00300550 23                                                                  | 1.90703220 04                                              |
| 1050                                           | 1060                                           | 1.00295620 23                                                                  | 1.88886350 04                                              |
| 1060                                           | 1070                                           | 1.00257950 23                                                                  | 1.87042520 04                                              |
| 1070                                           | 1080                                           | 1.00188850 23                                                                  | 1.85174900 04                                              |
| 1080                                           | 1090                                           | 1.00089610 23                                                                  | 1.83286500 04                                              |
| 1090                                           | 1100                                           | 9.99614760 22                                                                  | 1.81380160 04                                              |
| 1100                                           | 1110                                           | 9.98056750 22                                                                  | 1.79458580 04                                              |
| 1110                                           | 1120                                           | 9.96234030 22                                                                  | 1.77524300 04                                              |
| 1120                                           | 1130                                           | 9.94158280 22                                                                  | 1.75579720 04                                              |
| 1130                                           | 1140                                           | 9.91840960 22                                                                  | 1.73627090 04                                              |
| 1140                                           | 1150                                           | 9.89292810 22                                                                  | 1.71668550 04                                              |
| 1150                                           | 1160                                           | 9.86524880 22                                                                  | 1.69706090 04                                              |
| 1160                                           | 1170                                           | 9.83547510 22                                                                  | 1.67741610 04                                              |
| 1170                                           | 1180                                           | 9.80370830 22                                                                  | 1.65776870 04                                              |
| 1180                                           | 1190                                           | 9.77004680 22                                                                  | 1.63813510 04                                              |
| 1190                                           | 1200                                           | 9.73458570 22                                                                  | 1.61853090 04                                              |
| 1200                                           | 1210                                           | 9.69741720 22                                                                  | 1.59897050 04                                              |
| 1210                                           | 1220                                           | 9.65863070 22                                                                  | 1.57946760 04                                              |
| 1220                                           | 1230                                           | 9.61831250 22                                                                  | 1.56003460 04                                              |
| 1230                                           | 1240                                           | 9.57654600 22                                                                  | 1.54068330 04                                              |
| 1240                                           | 1250                                           | 9.53341190 22                                                                  | 1.52142460 04                                              |
| 1250                                           | 1260                                           | 9.48898810 22                                                                  | 1.50226860 04                                              |
| 1260                                           | 1270                                           | 9.44334970 22                                                                  | 1.48322480 04                                              |
| 1270                                           | 1280                                           | 9.39656910 22                                                                  | 1.46430160 04                                              |
| 1280                                           | 1290                                           | 9.34871630 22                                                                  | 1.44550720 04                                              |
| 1290                                           | 1300                                           | 9.29985850 22                                                                  | 1.42684880 04                                              |
| 1300                                           | 1310                                           | 9.25006050 22                                                                  | 1.40833330 04                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 9.19938480 22                                                                  | 1.38796670 04                                              |
| 1320                                           | 1330                                           | 9.14789140 22                                                                  | 1.37175480 04                                              |
| 1330                                           | 1340                                           | 9.09563790 22                                                                  | 1.35370260 04                                              |
| 1340                                           | 1350                                           | 9.04268000 22                                                                  | 1.33581470 04                                              |
| 1350                                           | 1360                                           | 8.98907090 22                                                                  | 1.31809540 04                                              |
| 1360                                           | 1370                                           | 8.93486180 22                                                                  | 1.30054840 04                                              |
| 1370                                           | 1380                                           | 8.88010190 22                                                                  | 1.28317700 04                                              |
| 1380                                           | 1390                                           | 8.82483840 22                                                                  | 1.26598420 04                                              |
| 1390                                           | 1400                                           | 8.76911640 22                                                                  | 1.24897260 04                                              |
| 1400                                           | 1410                                           | 8.71297950 22                                                                  | 1.23214440 04                                              |
| 1410                                           | 1420                                           | 8.65646910 22                                                                  | 1.21550170 04                                              |
| 1420                                           | 1430                                           | 8.59962510 22                                                                  | 1.19904610 04                                              |
| 1430                                           | 1440                                           | 8.54248550 22                                                                  | 1.18277890 04                                              |
| 1440                                           | 1450                                           | 8.48508690 22                                                                  | 1.16670120 04                                              |
| 1450                                           | 1460                                           | 8.42746420 22                                                                  | 1.15081390 04                                              |
| 1460                                           | 1470                                           | 8.36965070 22                                                                  | 1.13511760 04                                              |
| 1470                                           | 1480                                           | 8.31167840 22                                                                  | 1.11961280 04                                              |
| 1480                                           | 1490                                           | 8.25357780 22                                                                  | 1.10429960 04                                              |
| 1490                                           | 1500                                           | 8.19537780 22                                                                  | 1.08917810 04                                              |
| 1500                                           | 1510                                           | 8.13710640 22                                                                  | 1.07424800 04                                              |
| 1510                                           | 1520                                           | 8.07879000 22                                                                  | 1.05950920 04                                              |
| 1520                                           | 1530                                           | 8.02045380 22                                                                  | 1.04496110 04                                              |
| 1530                                           | 1540                                           | 7.96212200 22                                                                  | 1.03060320 04                                              |
| 1540                                           | 1550                                           | 7.90381740 22                                                                  | 1.01643450 04                                              |
| 1550                                           | 1560                                           | 7.84556190 22                                                                  | 1.00245440 04                                              |
| 1560                                           | 1570                                           | 7.78737630 22                                                                  | 9.88661860 03                                              |
| 1570                                           | 1580                                           | 7.72928030 22                                                                  | 9.75055740 03                                              |
| 1580                                           | 1590                                           | 7.67129270 22                                                                  | 9.61634890 03                                              |
| 1590                                           | 1600                                           | 7.61343130 22                                                                  | 9.48398040 03                                              |
| 1600                                           | 1610                                           | 7.55571300 22                                                                  | 9.35343860 03                                              |
| 1610                                           | 1620                                           | 7.49815380 22                                                                  | 9.22470910 03                                              |
| 1620                                           | 1630                                           | 7.44076900 22                                                                  | 9.09777720 03                                              |
| 1630                                           | 1640                                           | 7.38357290 22                                                                  | 8.97262740 03                                              |
| 1640                                           | 1650                                           | 7.32657910 22                                                                  | 8.84924350 03                                              |
| 1650                                           | 1660                                           | 7.26980060 22                                                                  | 8.72760900 03                                              |
| 1660                                           | 1670                                           | 7.21324940 22                                                                  | 8.60770700 03                                              |
| 1670                                           | 1680                                           | 7.15693710 22                                                                  | 8.48951990 03                                              |
| 1680                                           | 1690                                           | 7.10087440 22                                                                  | 8.37303000 03                                              |
| 1690                                           | 1700                                           | 7.04507150 22                                                                  | 8.25821920 03                                              |
| 1700                                           | 1710                                           | 6.98953800 22                                                                  | 8.14506900 03                                              |
| 1710                                           | 1720                                           | 6.93428290 22                                                                  | 8.03356100 03                                              |
| 1720                                           | 1730                                           | 6.87931460 22                                                                  | 7.92367610 03                                              |
| 1730                                           | 1740                                           | 6.82464100 22                                                                  | 7.81539550 03                                              |
| 1740                                           | 1750                                           | 6.77026950 22                                                                  | 7.70869980 03                                              |
| 1750                                           | 1760                                           | 6.71620710 22                                                                  | 7.60356490 03                                              |
| 1760                                           | 1770                                           | 6.66246000 22                                                                  | 7.49998640 03                                              |
| 1770                                           | 1780                                           | 6.60903430 22                                                                  | 7.39792970 03                                              |
| 1780                                           | 1790                                           | 6.55593560 22                                                                  | 7.29738050 03                                              |
| 1790                                           | 1800                                           | 6.50316900 22                                                                  | 7.19831910 03                                              |
| 1800                                           | 1810                                           | 6.45073910 22                                                                  | 7.10072620 03                                              |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

T = 3500°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>$W m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 1810                                   | 1820                                   | 6.39865040 22                                           | 7.00458210 03                               |
| 1820                                   | 1830                                   | 6.34690690 22                                           | 6.90986740 03                               |
| 1830                                   | 1840                                   | 6.29551220 22                                           | 6.81656280 03                               |
| 1840                                   | 1850                                   | 6.24446970 22                                           | 6.72464880 03                               |
| 1850                                   | 1860                                   | 6.19378220 22                                           | 6.63410620 03                               |
| 1860                                   | 1870                                   | 6.14345270 22                                           | 6.54491580 03                               |
| 1870                                   | 1880                                   | 6.09348340 22                                           | 6.45705850 03                               |
| 1880                                   | 1890                                   | 6.04387650 22                                           | 6.37051550 03                               |
| 1890                                   | 1900                                   | 5.99463400 22                                           | 6.28526780 03                               |
| 1900                                   | 1910                                   | 5.94575730 22                                           | 6.20129670 03                               |
| 1910                                   | 1920                                   | 5.89724800 22                                           | 6.11858370 03                               |
| 1920                                   | 1930                                   | 5.84910720 22                                           | 6.03711050 03                               |
| 1930                                   | 1940                                   | 5.80133590 22                                           | 5.95685870 03                               |
| 1940                                   | 1950                                   | 5.75393470 22                                           | 5.87781020 03                               |
| 1950                                   | 1960                                   | 5.70690420 22                                           | 5.79994730 03                               |
| 1960                                   | 1970                                   | 5.66024480 22                                           | 5.72325200 03                               |
| 1970                                   | 1980                                   | 5.61395670 22                                           | 5.64770690 03                               |
| 1980                                   | 1990                                   | 5.56804000 22                                           | 5.57329460 03                               |
| 1990                                   | 2000                                   | 5.52249430 22                                           | 5.49999800 03                               |
| 2000                                   | 2010                                   | 5.47731940 22                                           | 5.42779990 03                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 3500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 5.28011900 23                                                                  | 5.12022030 04                                              |
| 2100                                           | 2200                                           | 4.86487710 23                                                                  | 4.49797450 04                                              |
| 2200                                           | 2300                                           | 4.48471937 23                                                                  | 3.96207150 04                                              |
| 2300                                           | 2400                                           | 4.13756000 23                                                                  | 3.49971850 04                                              |
| 2400                                           | 2500                                           | 3.82101230 23                                                                  | 3.09996790 04                                              |
| 2500                                           | 2600                                           | 3.53259540 23                                                                  | 2.75351650 04                                              |
| 2600                                           | 2700                                           | 3.26986200 23                                                                  | 2.45249170 04                                              |
| 2700                                           | 2800                                           | 3.03047410 23                                                                  | 2.19024510 04                                              |
| 2800                                           | 2900                                           | 2.81224320 23                                                                  | 1.96116620 04                                              |
| 2900                                           | 3000                                           | 2.61314930 23                                                                  | 1.76051950 04                                              |
| 3000                                           | 3200                                           | 4.69650460 23                                                                  | 3.01343720 04                                              |
| 3200                                           | 3400                                           | 4.08678770 23                                                                  | 2.46302130 04                                              |
| 3400                                           | 3600                                           | 3.57431750 23                                                                  | 2.03087380 04                                              |
| 3600                                           | 3800                                           | 3.14139230 23                                                                  | 1.68826980 04                                              |
| 3800                                           | 4000                                           | 2.77377250 23                                                                  | 1.41415150 04                                              |
| 4000                                           | 4200                                           | 2.46000510 23                                                                  | 1.19292780 04                                              |
| 4200                                           | 4400                                           | 2.19085980 23                                                                  | 1.01294020 04                                              |
| 4400                                           | 4600                                           | 1.95887270 23                                                                  | 8.65396040 03                                              |
| 4600                                           | 4800                                           | 1.75798360 23                                                                  | 7.43556710 03                                              |
| 4800                                           | 5000                                           | 1.58324980 23                                                                  | 6.42293520 03                                              |
| 5000                                           | 5500                                           | 3.33066340 23                                                                  | 1.26388610 04                                              |
| 5500                                           | 6000                                           | 2.63285050 23                                                                  | 9.11825900 03                                              |
| 6000                                           | 6500                                           | 2.11573500 23                                                                  | 6.73893790 03                                              |
| 6500                                           | 7000                                           | 1.72484090 23                                                                  | 5.08558700 03                                              |
| 7000                                           | 7500                                           | 1.42412200 23                                                                  | 3.90852010 03                                              |
| 7500                                           | 8000                                           | 1.18913640 23                                                                  | 3.05250930 03                                              |
| 8000                                           | 8500                                           | 1.00293900 23                                                                  | 2.41815610 03                                              |
| 8500                                           | 9000                                           | 8.53544780 22                                                                  | 1.94012140 03                                              |
| 9000                                           | 9500                                           | 7.32321850 22                                                                  | 1.57443910 03                                              |
| 9500                                           | 10000                                          | 6.32950100 22                                                                  | 1.29089800 03                                              |
| 10000                                          | 11000                                          | 1.03286220 23                                                                  | 1.96004650 03                                              |
| 11000                                          | 12000                                          | 8.00030350 22                                                                  | 1.38554240 03                                              |
| 12000                                          | 13000                                          | 6.32160350 22                                                                  | 1.00686630 03                                              |
| 13000                                          | 14000                                          | 5.09111480 22                                                                  | 7.49127760 02                                              |
| 14000                                          | 15000                                          | 4.14481540 22                                                                  | 5.68811270 02                                              |
| 15000                                          | 16000                                          | 3.42496900 22                                                                  | 4.39617120 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 5.2412573D 21                                                                | 3.4122395D 03                                             |
| 310                                    | 320                                    | 6.6965430D 21                                                                | 4.2215705D 03                                             |
| 320                                    | 330                                    | 8.3953158D 21                                                                | 5.1299575D 03                                             |
| 330                                    | 340                                    | 1.0346174D 22                                                                | 6.1336346D 03                                             |
| 340                                    | 350                                    | 1.2553668D 22                                                                | 7.2269396D 03                                             |
| 350                                    | 360                                    | 1.5018310D 22                                                                | 8.4025898D 03                                             |
| 360                                    | 370                                    | 1.7736732D 22                                                                | 9.6519858D 03                                             |
| 370                                    | 380                                    | 2.0701940D 22                                                                | 1.0965525D 04                                             |
| 380                                    | 390                                    | 2.3903662D 22                                                                | 1.2332907D 04                                             |
| 390                                    | 400                                    | 2.7328740D 22                                                                | 1.3743427D 04                                             |
| 400                                    | 410                                    | 3.0961567D 22                                                                | 1.5186232D 04                                             |
| 410                                    | 420                                    | 3.4784535D 22                                                                | 1.6650558D 04                                             |
| 420                                    | 430                                    | 3.8778472D 22                                                                | 1.8125922D 04                                             |
| 430                                    | 440                                    | 4.2923073D 22                                                                | 1.9602288D 04                                             |
| 440                                    | 450                                    | 4.7197298D 22                                                                | 2.1070192D 04                                             |
| 450                                    | 460                                    | 5.1579739D 22                                                                | 2.2520844D 04                                             |
| 460                                    | 470                                    | 5.6048948D 22                                                                | 2.3946191D 04                                             |
| 470                                    | 480                                    | 6.0583728D 22                                                                | 2.5338962D 04                                             |
| 480                                    | 490                                    | 6.5163376D 22                                                                | 2.6692691D 04                                             |
| 490                                    | 500                                    | 6.9767898D 22                                                                | 2.8001716D 04                                             |
| 500                                    | 510                                    | 7.4378170D 22                                                                | 2.9261168D 04                                             |
| 510                                    | 520                                    | 7.8976080D 22                                                                | 3.0466947D 04                                             |
| 520                                    | 530                                    | 8.3544627D 22                                                                | 3.1615683D 04                                             |
| 530                                    | 540                                    | 8.8067990D 22                                                                | 3.2704700D 04                                             |
| 540                                    | 550                                    | 9.2531579D 22                                                                | 3.3731964D 04                                             |
| 550                                    | 560                                    | 9.6922056D 22                                                                | 3.4696037D 04                                             |
| 560                                    | 570                                    | 1.0122734D 23                                                                | 3.5596025D 04                                             |
| 570                                    | 580                                    | 1.0543658D 23                                                                | 3.6431525D 04                                             |
| 580                                    | 590                                    | 1.0954017D 23                                                                | 3.7202576D 04                                             |
| 590                                    | 600                                    | 1.1352966D 23                                                                | 3.7909607D 04                                             |
| 600                                    | 610                                    | 1.1739773D 23                                                                | 3.8553391D 04                                             |
| 610                                    | 620                                    | 1.2113817D 23                                                                | 3.9135001D 04                                             |
| 620                                    | 630                                    | 1.2474575D 23                                                                | 3.9655765D 04                                             |
| 630                                    | 640                                    | 1.2821624D 23                                                                | 4.0117230D 04                                             |
| 640                                    | 650                                    | 1.3154629D 23                                                                | 4.0521121D 04                                             |
| 650                                    | 660                                    | 1.3473339D 23                                                                | 4.0869313D 04                                             |
| 660                                    | 670                                    | 1.3777578D 23                                                                | 4.1163798D 04                                             |
| 670                                    | 680                                    | 1.4067244D 23                                                                | 4.1406658D 04                                             |
| 680                                    | 690                                    | 1.4342297D 23                                                                | 4.1600041D 04                                             |
| 690                                    | 700                                    | 1.4602758D 23                                                                | 4.1746137D 04                                             |
| 700                                    | 710                                    | 1.4848697D 23                                                                | 4.1847163D 04                                             |
| 710                                    | 720                                    | 1.5080236D 23                                                                | 4.1905344D 04                                             |
| 720                                    | 730                                    | 1.5297536D 23                                                                | 4.1922895D 04                                             |
| 730                                    | 740                                    | 1.5500797D 23                                                                | 4.1902016D 04                                             |
| 740                                    | 750                                    | 1.5690251D 23                                                                | 4.1844871D 04                                             |
| 750                                    | 760                                    | 1.5866158D 23                                                                | 4.1753590D 04                                             |
| 760                                    | 770                                    | 1.6028804D 23                                                                | 4.1630250D 04                                             |
| 770                                    | 780                                    | 1.6178495D 23                                                                | 4.1476879D 04                                             |
| 780                                    | 790                                    | 1.6315555D 23                                                                | 4.1295444D 04                                             |
| 790                                    | 800                                    | 1.6440322D 23                                                                | 4.1087848D 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 1.65531460 23                                                                | 4.08559290 04                                             |
| 810                                    | 820                                    | 1.66543840 23                                                                | 4.06014580 04                                             |
| 820                                    | 830                                    | 1.67444030 23                                                                | 4.03261330 04                                             |
| 830                                    | 840                                    | 1.68235730 23                                                                | 4.00315860 04                                             |
| 840                                    | 850                                    | 1.68922650 23                                                                | 3.97193730 04                                             |
| 850                                    | 860                                    | 1.69508530 23                                                                | 3.93909830 04                                             |
| 860                                    | 870                                    | 1.69997110 23                                                                | 3.90478330 04                                             |
| 870                                    | 880                                    | 1.70392080 23                                                                | 3.86912710 04                                             |
| 880                                    | 890                                    | 1.70697140 23                                                                | 3.83225780 04                                             |
| 890                                    | 900                                    | 1.70915900 23                                                                | 3.79429680 04                                             |
| 900                                    | 910                                    | 1.71051970 23                                                                | 3.75535890 04                                             |
| 910                                    | 920                                    | 1.71108860 23                                                                | 3.71555290 04                                             |
| 920                                    | 930                                    | 1.71090040 23                                                                | 3.67498120 04                                             |
| 930                                    | 940                                    | 1.70998910 23                                                                | 3.63374040 04                                             |
| 940                                    | 950                                    | 1.70838760 23                                                                | 3.59192160 04                                             |
| 950                                    | 960                                    | 1.70612850 23                                                                | 3.54961020 04                                             |
| 960                                    | 970                                    | 1.70324320 23                                                                | 3.50688640 04                                             |
| 970                                    | 980                                    | 1.69976240 23                                                                | 3.46382540 04                                             |
| 980                                    | 990                                    | 1.69571600 23                                                                | 3.42049770 04                                             |
| 990                                    | 1000                                   | 1.69113280 23                                                                | 3.37696900 04                                             |
| 1000                                   | 1010                                   | 1.68604090 23                                                                | 3.33330080 04                                             |
| 1010                                   | 1020                                   | 1.68046740 23                                                                | 3.28955040 04                                             |
| 1020                                   | 1030                                   | 1.67443860 23                                                                | 3.24577100 04                                             |
| 1030                                   | 1040                                   | 1.66797980 23                                                                | 3.20201210 04                                             |
| 1040                                   | 1050                                   | 1.66111560 23                                                                | 3.15831980 04                                             |
| 1050                                   | 1060                                   | 1.65386940 23                                                                | 3.11473640 04                                             |
| 1060                                   | 1070                                   | 1.64626410 23                                                                | 3.07130150 04                                             |
| 1070                                   | 1080                                   | 1.63832150 23                                                                | 3.02805120 04                                             |
| 1080                                   | 1090                                   | 1.63006270 23                                                                | 2.98501910 04                                             |
| 1090                                   | 1100                                   | 1.62150780 23                                                                | 2.94223580 04                                             |
| 1100                                   | 1110                                   | 1.61267640 23                                                                | 2.89972960 04                                             |
| 1110                                   | 1120                                   | 1.60358710 23                                                                | 2.85752620 04                                             |
| 1120                                   | 1130                                   | 1.59425780 23                                                                | 2.81564910 04                                             |
| 1130                                   | 1140                                   | 1.58470550 23                                                                | 2.77411980 04                                             |
| 1140                                   | 1150                                   | 1.57494680 23                                                                | 2.73295750 04                                             |
| 1150                                   | 1160                                   | 1.56499730 23                                                                | 2.69217990 04                                             |
| 1160                                   | 1170                                   | 1.55487200 23                                                                | 2.65180260 04                                             |
| 1170                                   | 1180                                   | 1.54458540 23                                                                | 2.61183970 04                                             |
| 1180                                   | 1190                                   | 1.53415120 23                                                                | 2.57230370 04                                             |
| 1190                                   | 1200                                   | 1.52358250 23                                                                | 2.53320590 04                                             |
| 1200                                   | 1210                                   | 1.51289180 23                                                                | 2.49455580 04                                             |
| 1210                                   | 1220                                   | 1.50209110 23                                                                | 2.45636190 04                                             |
| 1220                                   | 1230                                   | 1.49119170 23                                                                | 2.41863170 04                                             |
| 1230                                   | 1240                                   | 1.48020450 23                                                                | 2.38137120 04                                             |
| 1240                                   | 1250                                   | 1.46913990 23                                                                | 2.34458550 04                                             |
| 1250                                   | 1260                                   | 1.45800750 23                                                                | 2.30827900 04                                             |
| 1260                                   | 1270                                   | 1.44681690 23                                                                | 2.27245500 04                                             |
| 1270                                   | 1280                                   | 1.43557690 23                                                                | 2.23711590 04                                             |
| 1280                                   | 1290                                   | 1.42429590 23                                                                | 2.20226350 04                                             |
| 1290                                   | 1300                                   | 1.41298200 23                                                                | 2.16789880 04                                             |
| 1300                                   | 1310                                   | 1.40164270 23                                                                | 2.13402220 04                                             |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 4000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 1.39028530 23                                                                | 2.10063340 04                                             |
| 1320                                   | 1330                                   | 1.37891660 23                                                                | 2.06773180 04                                             |
| 1330                                   | 1340                                   | 1.36754320 23                                                                | 2.03531590 04                                             |
| 1340                                   | 1350                                   | 1.35617100 23                                                                | 2.00338390 04                                             |
| 1350                                   | 1360                                   | 1.34480600 23                                                                | 1.97193380 04                                             |
| 1360                                   | 1370                                   | 1.33345360 23                                                                | 1.94096280 04                                             |
| 1370                                   | 1380                                   | 1.32211900 23                                                                | 1.91046800 04                                             |
| 1380                                   | 1390                                   | 1.31080700 23                                                                | 1.88044610 04                                             |
| 1390                                   | 1400                                   | 1.29952240 23                                                                | 1.85089340 04                                             |
| 1400                                   | 1410                                   | 1.28826930 23                                                                | 1.82180620 04                                             |
| 1410                                   | 1420                                   | 1.27705200 23                                                                | 1.79318020 04                                             |
| 1420                                   | 1430                                   | 1.26587420 23                                                                | 1.76501110 04                                             |
| 1430                                   | 1440                                   | 1.25473950 23                                                                | 1.73729440 04                                             |
| 1440                                   | 1450                                   | 1.24365140 23                                                                | 1.71002530 04                                             |
| 1450                                   | 1460                                   | 1.23261290 23                                                                | 1.68319880 04                                             |
| 1460                                   | 1470                                   | 1.22162720 23                                                                | 1.65681010 04                                             |
| 1470                                   | 1480                                   | 1.21069690 23                                                                | 1.63085390 04                                             |
| 1480                                   | 1490                                   | 1.19982470 23                                                                | 1.60532490 04                                             |
| 1490                                   | 1500                                   | 1.18901290 23                                                                | 1.58021780 04                                             |
| 1500                                   | 1510                                   | 1.17826380 23                                                                | 1.55552710 04                                             |
| 1510                                   | 1520                                   | 1.16757950 23                                                                | 1.53124740 04                                             |
| 1520                                   | 1530                                   | 1.15696200 23                                                                | 1.50737300 04                                             |
| 1530                                   | 1540                                   | 1.14641300 23                                                                | 1.48389840 04                                             |
| 1540                                   | 1550                                   | 1.13593410 23                                                                | 1.46081790 04                                             |
| 1550                                   | 1560                                   | 1.12552700 23                                                                | 1.43812590 04                                             |
| 1560                                   | 1570                                   | 1.11519290 23                                                                | 1.41581670 04                                             |
| 1570                                   | 1580                                   | 1.10493330 23                                                                | 1.39388460 04                                             |
| 1580                                   | 1590                                   | 1.09474910 23                                                                | 1.37232400 04                                             |
| 1590                                   | 1600                                   | 1.08464160 23                                                                | 1.35112910 04                                             |
| 1600                                   | 1610                                   | 1.07461160 23                                                                | 1.33029440 04                                             |
| 1610                                   | 1620                                   | 1.06466010 23                                                                | 1.30981410 04                                             |
| 1620                                   | 1630                                   | 1.05478770 23                                                                | 1.28968270 04                                             |
| 1630                                   | 1640                                   | 1.04499510 23                                                                | 1.26989460 04                                             |
| 1640                                   | 1650                                   | 1.03528310 23                                                                | 1.25044430 04                                             |
| 1650                                   | 1660                                   | 1.02565190 23                                                                | 1.23132620 04                                             |
| 1660                                   | 1670                                   | 1.01610220 23                                                                | 1.21253490 04                                             |
| 1670                                   | 1680                                   | 1.00663430 23                                                                | 1.19406500 04                                             |
| 1680                                   | 1690                                   | 9.9724 470 22                                                                | 1.17591120 04                                             |
| 1690                                   | 1700                                   | 9.87944960 22                                                                | 1.15806800 04                                             |
| 1700                                   | 1710                                   | 9.78723970 22                                                                | 1.14053030 04                                             |
| 1710                                   | 1720                                   | 9.69585610 22                                                                | 1.12329290 04                                             |
| 1720                                   | 1730                                   | 9.60529970 22                                                                | 1.10635060 04                                             |
| 1730                                   | 1740                                   | 9.51557050 22                                                                | 1.08969830 04                                             |
| 1740                                   | 1750                                   | 9.42666850 22                                                                | 1.07333100 04                                             |
| 1750                                   | 1760                                   | 9.33859260 22                                                                | 1.05724390 04                                             |
| 1760                                   | 1770                                   | 9.25134200 22                                                                | 1.04143190 04                                             |
| 1770                                   | 1780                                   | 9.16491510 22                                                                | 1.02589030 04                                             |
| 1780                                   | 1790                                   | 9.07930990 22                                                                | 1.01061420 04                                             |
| 1790                                   | 1800                                   | 8.99452430 22                                                                | 9.95599150 03                                             |
| 1800                                   | 1810                                   | 8.91055540 22                                                                | 9.80840330 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 8.82740050 22                                                                  | 9.66333260 03                                              |
| 1820                                           | 1830                                           | 8.74505640 22                                                                  | 9.52073440 03                                              |
| 1830                                           | 1840                                           | 8.66351960 22                                                                  | 9.38056450 03                                              |
| 1840                                           | 1850                                           | 8.58278640 22                                                                  | 9.24277940 03                                              |
| 1850                                           | 1860                                           | 8.50285270 22                                                                  | 9.10733630 03                                              |
| 1860                                           | 1870                                           | 8.42371430 22                                                                  | 8.97419300 03                                              |
| 1870                                           | 1880                                           | 8.34536700 22                                                                  | 8.84330810 03                                              |
| 1880                                           | 1890                                           | 8.26780600 22                                                                  | 8.71464080 03                                              |
| 1890                                           | 1900                                           | 8.19102660 22                                                                  | 8.58815090 03                                              |
| 1900                                           | 1910                                           | 8.11502380 22                                                                  | 8.46379900 03                                              |
| 1910                                           | 1920                                           | 8.03979250 22                                                                  | 8.34154630 03                                              |
| 1920                                           | 1930                                           | 7.96532760 22                                                                  | 8.22135470 03                                              |
| 1930                                           | 1940                                           | 7.89162350 22                                                                  | 8.10318670 03                                              |
| 1940                                           | 1950                                           | 7.81867470 22                                                                  | 7.98700550 03                                              |
| 1950                                           | 1960                                           | 7.74647580 22                                                                  | 7.87277480 03                                              |
| 1960                                           | 1970                                           | 7.67502090 22                                                                  | 7.76045910 03                                              |
| 1970                                           | 1980                                           | 7.60430430 22                                                                  | 7.65002350 03                                              |
| 1980                                           | 1990                                           | 7.53432000 22                                                                  | 7.54143360 03                                              |
| 1990                                           | 2000                                           | 7.46506210 22                                                                  | 7.43465580 03                                              |
| 2000                                           | 2010                                           | 7.39652460 22                                                                  | 7.32965690 03                                              |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 7.09968600 23                                                                | 6.88495230 04                                             |
| 2100                                   | 2200                                   | 6.48240040 23                                                                | 5.99370530 04                                             |
| 2200                                   | 2300                                   | 5.92740470 23                                                                | 5.23677650 04                                             |
| 2300                                   | 2400                                   | 5.42850650 23                                                                | 4.59176800 04                                             |
| 2400                                   | 2500                                   | 4.97985710 23                                                                | 4.04022010 04                                             |
| 2500                                   | 2600                                   | 4.57606560 23                                                                | 3.56692740 04                                             |
| 2600                                   | 2700                                   | 4.21224120 23                                                                | 3.15935640 04                                             |
| 2700                                   | 2800                                   | 3.88349250 23                                                                | 2.80715860 04                                             |
| 2800                                   | 2900                                   | 3.58740390 23                                                                | 2.50177080 04                                             |
| 2900                                   | 3000                                   | 3.31899990 23                                                                | 2.23608830 04                                             |
| 3000                                   | 3200                                   | 5.93050420 23                                                                | 3.80536610 04                                             |
| 3200                                   | 3400                                   | 5.12473360 23                                                                | 3.08857060 04                                             |
| 3400                                   | 3600                                   | 4.45493790 23                                                                | 2.53129760 04                                             |
| 3600                                   | 3800                                   | 3.89447020 23                                                                | 2.09304170 04                                             |
| 3800                                   | 4000                                   | 3.42246980 23                                                                | 1.74490990 04                                             |
| 4000                                   | 4200                                   | 3.02252570 23                                                                | 1.46573410 04                                             |
| 4200                                   | 4400                                   | 2.69165290 23                                                                | 1.23987480 04                                             |
| 4400                                   | 4600                                   | 2.38951410 23                                                                | 1.05564650 04                                             |
| 4600                                   | 4800                                   | 2.13782750 23                                                                | 9.04224930 03                                             |
| 4800                                   | 5000                                   | 1.91991640 23                                                                | 7.78879690 03                                             |
| 5000                                   | 5500                                   | 4.02186100 23                                                                | 1.52624480 04                                             |
| 5500                                   | 6000                                   | 3.16250210 23                                                                | 1.09529600 04                                             |
| 6000                                   | 6500                                   | 2.53030250 23                                                                | 3.05961140 03                                             |
| 6500                                   | 7000                                   | 2.05527530 23                                                                | 6.05997790 03                                             |
| 7000                                   | 7500                                   | 1.69156380 23                                                                | 4.64286830 03                                             |
| 7500                                   | 8000                                   | 1.40874290 23                                                                | 3.61628710 03                                             |
| 8000                                   | 8500                                   | 1.13538370 23                                                                | 2.85807470 03                                             |
| 8500                                   | 9000                                   | 1.00674340 23                                                                | 2.28836530 03                                             |
| 9000                                   | 9500                                   | 8.62193820 22                                                                | 1.35366870 03                                             |
| 9500                                   | 10000                                  | 7.43992570 22                                                                | 1.51737840 03                                             |
| 10000                                  | 11000                                  | 2.1155920 23                                                                 | 2.29920480 03                                             |
| 11000                                  | 12000                                  | 9.36199620 22                                                                | 1.62139430 03                                             |
| 12000                                  | 13000                                  | 7.38295160 22                                                                | 1.17590960 03                                             |
| 13000                                  | 14000                                  | 5.92413750 22                                                                | 8.73426080 02                                             |
| 14000                                  | 15000                                  | 4.82553960 22                                                                | 6.62235120 02                                             |
| 15000                                  | 16000                                  | 3.98250200 22                                                                | 5.11183310 02                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 1.94186840 22                                                                | 1.26437130 04                                             |
| 310                                    | 320                                    | 2.38022010 22                                                                | 1.50067500 04                                             |
| 320                                    | 330                                    | 2.87006050 22                                                                | 1.75392010 04                                             |
| 330                                    | 340                                    | 3.40979830 22                                                                | 2.02164630 04                                             |
| 340                                    | 350                                    | 3.99700700 22                                                                | 2.30119730 04                                             |
| 350                                    | 360                                    | 4.62854110 22                                                                | 2.58981350 04                                             |
| 360                                    | 370                                    | 5.30066280 22                                                                | 2.88471510 04                                             |
| 370                                    | 380                                    | 6.00916950 22                                                                | 3.18317260 04                                             |
| 380                                    | 390                                    | 6.74952050 22                                                                | 3.48256500 04                                             |
| 390                                    | 400                                    | 7.51695470 22                                                                | 3.78042630 04                                             |
| 400                                    | 410                                    | 8.30659910 22                                                                | 4.07447880 04                                             |
| 410                                    | 420                                    | 9.11356520 22                                                                | 4.36265700 04                                             |
| 420                                    | 430                                    | 9.93303190 22                                                                | 4.64312130 04                                             |
| 430                                    | 440                                    | 1.07603160 23                                                                | 4.91426410 04                                             |
| 440                                    | 450                                    | 1.15909290 23                                                                | 5.17470950 04                                             |
| 450                                    | 460                                    | 1.24206240 23                                                                | 5.42330740 04                                             |
| 460                                    | 470                                    | 1.32454250 23                                                                | 5.65912360 04                                             |
| 470                                    | 480                                    | 1.40616570 23                                                                | 5.88142750 04                                             |
| 480                                    | 490                                    | 1.48659570 23                                                                | 6.08967690 04                                             |
| 490                                    | 500                                    | 1.56552930 23                                                                | 6.28350230 04                                             |
| 500                                    | 510                                    | 1.64269150 23                                                                | 6.46269000 04                                             |
| 510                                    | 520                                    | 1.71784490 23                                                                | 6.62716570 04                                             |
| 520                                    | 530                                    | 1.79077940 23                                                                | 6.77697770 04                                             |
| 530                                    | 540                                    | 1.86131540 23                                                                | 6.91228130 04                                             |
| 540                                    | 550                                    | 1.92930160 23                                                                | 7.03332380 04                                             |
| 550                                    | 560                                    | 1.99461350 23                                                                | 7.14043010 04                                             |
| 560                                    | 570                                    | 2.05715150 23                                                                | 7.23398990 04                                             |
| 570                                    | 580                                    | 2.11683930 23                                                                | 7.31444590 04                                             |
| 580                                    | 590                                    | 2.17362170 23                                                                | 7.38228290 04                                             |
| 590                                    | 600                                    | 2.22746310 23                                                                | 7.43801800 04                                             |
| 600                                    | 610                                    | 2.27834530 23                                                                | 7.48219210 04                                             |
| 610                                    | 620                                    | 2.32626650 23                                                                | 7.51536230 04                                             |
| 620                                    | 630                                    | 2.37123850 23                                                                | 7.53809520 04                                             |
| 630                                    | 640                                    | 2.41328610 23                                                                | 7.55096110 04                                             |
| 640                                    | 650                                    | 2.45244510 23                                                                | 7.55452920 04                                             |
| 650                                    | 660                                    | 2.48876090 23                                                                | 7.54936310 04                                             |
| 660                                    | 670                                    | 2.52228720 23                                                                | 7.53601750 04                                             |
| 670                                    | 680                                    | 2.55308510 23                                                                | 7.51503540 04                                             |
| 680                                    | 690                                    | 2.58122130 23                                                                | 7.48694520 04                                             |
| 690                                    | 700                                    | 2.60676790 23                                                                | 7.45225930 04                                             |
| 700                                    | 710                                    | 2.62980060 23                                                                | 7.41147240 04                                             |
| 710                                    | 720                                    | 2.65039870 23                                                                | 7.36506020 04                                             |
| 720                                    | 730                                    | 2.66864370 23                                                                | 7.31347920 04                                             |
| 730                                    | 740                                    | 2.68461890 23                                                                | 7.25716550 04                                             |
| 740                                    | 750                                    | 2.69840860 23                                                                | 7.19653480 04                                             |
| 750                                    | 760                                    | 2.71009800 23                                                                | 7.13198240 04                                             |
| 760                                    | 770                                    | 2.71977220 23                                                                | 7.06388340 04                                             |
| 770                                    | 780                                    | 2.72751590 23                                                                | 6.99259240 04                                             |
| 780                                    | 790                                    | 2.73341350 23                                                                | 6.91844450 04                                             |
| 790                                    | 800                                    | 2.73754800 23                                                                | 6.84175550 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 2.74000130 23                                                                | 6.76282220 04                                             |
| 810                                    | 820                                    | 2.74085400 23                                                                | 6.68192340 04                                             |
| 820                                    | 830                                    | 2.74018480 23                                                                | 6.59932020 04                                             |
| 830                                    | 840                                    | 2.73807050 23                                                                | 6.51525690 04                                             |
| 840                                    | 850                                    | 2.73458610 23                                                                | 6.42996150 04                                             |
| 850                                    | 860                                    | 2.72980450 23                                                                | 6.34364660 04                                             |
| 860                                    | 870                                    | 2.72379640 23                                                                | 6.25651010 04                                             |
| 870                                    | 880                                    | 2.71663030 23                                                                | 6.16873550 04                                             |
| 880                                    | 890                                    | 2.70837240 23                                                                | 6.08049320 04                                             |
| 890                                    | 900                                    | 2.69908650 23                                                                | 5.99194080 04                                             |
| 900                                    | 910                                    | 2.68883450 23                                                                | 5.90322400 04                                             |
| 910                                    | 920                                    | 2.67767560 23                                                                | 5.81447700 04                                             |
| 920                                    | 930                                    | 2.66566690 23                                                                | 5.72582340 04                                             |
| 930                                    | 940                                    | 2.65286320 23                                                                | 5.63737670 04                                             |
| 940                                    | 950                                    | 2.63931710 23                                                                | 5.54924100 04                                             |
| 950                                    | 960                                    | 2.62507900 23                                                                | 5.46151120 04                                             |
| 960                                    | 970                                    | 2.61019710 23                                                                | 5.37427410 04                                             |
| 970                                    | 980                                    | 2.59471760 23                                                                | 5.28760860 04                                             |
| 980                                    | 990                                    | 2.57868460 23                                                                | 5.20158620 04                                             |
| 990                                    | 1000                                   | 2.56214010 23                                                                | 5.11627160 04                                             |
| 1000                                   | 1010                                   | 2.54512430 23                                                                | 5.03172300 04                                             |
| 1010                                   | 1020                                   | 2.52767560 23                                                                | 4.94799270 04                                             |
| 1020                                   | 1030                                   | 2.50983020 23                                                                | 4.86512740 04                                             |
| 1030                                   | 1040                                   | 2.49162290 23                                                                | 4.78316850 04                                             |
| 1040                                   | 1050                                   | 2.47308670 23                                                                | 4.70215290 04                                             |
| 1050                                   | 1060                                   | 2.45425290 23                                                                | 4.62211250 04                                             |
| 1060                                   | 1070                                   | 2.43515120 23                                                                | 4.54307550 04                                             |
| 1070                                   | 1080                                   | 2.41580990 23                                                                | 4.46506610 04                                             |
| 1080                                   | 1090                                   | 2.39625570 23                                                                | 4.38810470 04                                             |
| 1090                                   | 1100                                   | 2.37651390 23                                                                | 4.31220880 04                                             |
| 1100                                   | 1110                                   | 2.35660860 23                                                                | 4.23739240 04                                             |
| 1110                                   | 1120                                   | 2.33656250 23                                                                | 4.16366710 04                                             |
| 1120                                   | 1130                                   | 2.31639700 23                                                                | 4.09104160 04                                             |
| 1130                                   | 1140                                   | 2.29613240 23                                                                | 4.01952240 04                                             |
| 1140                                   | 1150                                   | 2.27578780 23                                                                | 3.94911360 04                                             |
| 1150                                   | 1160                                   | 2.25538130 23                                                                | 3.87981760 04                                             |
| 1160                                   | 1170                                   | 2.23493000 23                                                                | 3.81163460 04                                             |
| 1170                                   | 1180                                   | 2.21444970 23                                                                | 3.74456340 04                                             |
| 1180                                   | 1190                                   | 2.19395570 23                                                                | 3.67860110 04                                             |
| 1190                                   | 1200                                   | 2.17346210 23                                                                | 3.61374340 04                                             |
| 1200                                   | 1210                                   | 2.15298220 23                                                                | 3.54998480 04                                             |
| 1210                                   | 1220                                   | 2.13252850 23                                                                | 3.48731870 04                                             |
| 1220                                   | 1230                                   | 2.11211280 23                                                                | 3.42573710 04                                             |
| 1230                                   | 1240                                   | 2.09174590 23                                                                | 3.36523160 04                                             |
| 1240                                   | 1250                                   | 2.07143830 23                                                                | 3.30579250 04                                             |
| 1250                                   | 1260                                   | 2.05119950 23                                                                | 3.24740960 04                                             |
| 1260                                   | 1270                                   | 2.03103840 23                                                                | 3.19007190 04                                             |
| 1270                                   | 1280                                   | 2.01096350 23                                                                | 3.13376780 04                                             |
| 1280                                   | 1290                                   | 1.99098240 23                                                                | 3.07848520 04                                             |
| 1290                                   | 1300                                   | 1.97110250 23                                                                | 3.02421160 04                                             |
| 1300                                   | 1310                                   | 1.95133050 23                                                                | 2.97093400 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 1.93167260 23                                                                  | 2.91863910 04                                              |
| 1320                                           | 1330                                           | 1.91213450 23                                                                  | 2.86731330 04                                              |
| 1330                                           | 1340                                           | 1.89272150 23                                                                  | 2.81694270 04                                              |
| 1340                                           | 1350                                           | 1.87343870 23                                                                  | 2.76751330 04                                              |
| 1350                                           | 1360                                           | 1.85429040 23                                                                  | 2.71901070 04                                              |
| 1360                                           | 1370                                           | 1.83528080 23                                                                  | 2.67142070 04                                              |
| 1370                                           | 1380                                           | 1.81641360 23                                                                  | 2.62472880 04                                              |
| 1380                                           | 1390                                           | 1.79769240 23                                                                  | 2.57892050 04                                              |
| 1390                                           | 1400                                           | 1.77912010 23                                                                  | 2.53398120 04                                              |
| 1400                                           | 1410                                           | 1.76069970 23                                                                  | 2.48989620 04                                              |
| 1410                                           | 1420                                           | 1.74243370 23                                                                  | 2.44665120 04                                              |
| 1420                                           | 1430                                           | 1.72432430 23                                                                  | 2.40423150 04                                              |
| 1430                                           | 1440                                           | 1.70637350 23                                                                  | 2.36262270 04                                              |
| 1440                                           | 1450                                           | 1.68858320 23                                                                  | 2.32181030 04                                              |
| 1450                                           | 1460                                           | 1.67095480 23                                                                  | 2.28178010 04                                              |
| 1460                                           | 1470                                           | 1.65348970 23                                                                  | 2.24251790 04                                              |
| 1470                                           | 1480                                           | 1.63618910 23                                                                  | 2.20400960 04                                              |
| 1480                                           | 1490                                           | 1.61905380 23                                                                  | 2.16624120 04                                              |
| 1490                                           | 1500                                           | 1.60208470 23                                                                  | 2.12919880 04                                              |
| 1500                                           | 1510                                           | 1.58528240 23                                                                  | 2.09286890 04                                              |
| 1510                                           | 1520                                           | 1.56864730 23                                                                  | 2.05723790 04                                              |
| 1520                                           | 1530                                           | 1.55217970 23                                                                  | 2.02229250 04                                              |
| 1530                                           | 1540                                           | 1.53587970 23                                                                  | 1.98801940 04                                              |
| 1540                                           | 1550                                           | 1.51974750 23                                                                  | 1.95440560 04                                              |
| 1550                                           | 1560                                           | 1.50378290 23                                                                  | 1.92143840 04                                              |
| 1560                                           | 1570                                           | 1.48798580 23                                                                  | 1.88910510 04                                              |
| 1570                                           | 1580                                           | 1.47235570 23                                                                  | 1.85739310 04                                              |
| 1580                                           | 1590                                           | 1.45689240 23                                                                  | 1.82629030 04                                              |
| 1590                                           | 1600                                           | 1.44159530 23                                                                  | 1.79578460 04                                              |
| 1600                                           | 1610                                           | 1.42646380 23                                                                  | 1.76586410 04                                              |
| 1610                                           | 1620                                           | 1.41149730 23                                                                  | 1.73651700 04                                              |
| 1620                                           | 1630                                           | 1.39669510 23                                                                  | 1.70773200 04                                              |
| 1630                                           | 1640                                           | 1.38205620 23                                                                  | 1.67949760 04                                              |
| 1640                                           | 1650                                           | 1.36758000 23                                                                  | 1.65180290 04                                              |
| 1650                                           | 1660                                           | 1.35326530 23                                                                  | 1.62463700 04                                              |
| 1660                                           | 1670                                           | 1.33911130 23                                                                  | 1.59798900 04                                              |
| 1670                                           | 1680                                           | 1.32511690 23                                                                  | 1.57184850 04                                              |
| 1680                                           | 1690                                           | 1.31128090 23                                                                  | 1.54620520 04                                              |
| 1690                                           | 1700                                           | 1.29760240 23                                                                  | 1.52104890 04                                              |
| 1700                                           | 1710                                           | 1.28408010 23                                                                  | 1.49636980 04                                              |
| 1710                                           | 1720                                           | 1.27071270 23                                                                  | 1.47215810 04                                              |
| 1720                                           | 1730                                           | 1.25749920 23                                                                  | 1.44840420 04                                              |
| 1730                                           | 1740                                           | 1.24443810 23                                                                  | 1.42509880 04                                              |
| 1740                                           | 1750                                           | 1.23152830 23                                                                  | 1.40223260 04                                              |
| 1750                                           | 1760                                           | 1.21876830 23                                                                  | 1.37979670 04                                              |
| 1760                                           | 1770                                           | 1.20615690 23                                                                  | 1.35778230 04                                              |
| 1770                                           | 1780                                           | 1.19369270 23                                                                  | 1.33618070 04                                              |
| 1780                                           | 1790                                           | 1.18137420 23                                                                  | 1.31498340 04                                              |
| 1790                                           | 1800                                           | 1.16920020 23                                                                  | 1.29418210 04                                              |
| 1800                                           | 1810                                           | 1.15716920 23                                                                  | 1.27376880 04                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 4500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 1.14527980 23                                                                  | 1.25373540 04                                              |
| 1820                                           | 1830                                           | 1.13353050 23                                                                  | 1.23407410 04                                              |
| 1830                                           | 1840                                           | 1.12192000 23                                                                  | 1.21477730 04                                              |
| 1840                                           | 1850                                           | 1.11046670 23                                                                  | 1.19583750 04                                              |
| 1850                                           | 1860                                           | 1.09910930 23                                                                  | 1.17724750 04                                              |
| 1860                                           | 1870                                           | 1.08790620 23                                                                  | 1.15899990 04                                              |
| 1870                                           | 1880                                           | 1.07683610 23                                                                  | 1.14108790 04                                              |
| 1880                                           | 1890                                           | 1.06589750 23                                                                  | 1.12350450 04                                              |
| 1890                                           | 1900                                           | 1.05508890 23                                                                  | 1.10624300 04                                              |
| 1900                                           | 1910                                           | 1.04440880 23                                                                  | 1.08929680 04                                              |
| 1910                                           | 1920                                           | 1.03385590 23                                                                  | 1.07265960 04                                              |
| 1920                                           | 1930                                           | 1.02342870 23                                                                  | 1.05632490 04                                              |
| 1930                                           | 1940                                           | 1.01312580 23                                                                  | 1.04028660 04                                              |
| 1940                                           | 1950                                           | 1.00294560 23                                                                  | 1.02453870 04                                              |
| 1950                                           | 1960                                           | 9.92886800 22                                                                  | 1.00907520 04                                              |
| 1960                                           | 1970                                           | 9.82947960 22                                                                  | 9.93890440 03                                              |
| 1970                                           | 1980                                           | 9.73127650 22                                                                  | 9.78978680 03                                              |
| 1980                                           | 1990                                           | 9.63424460 22                                                                  | 9.64334400 03                                              |
| 1990                                           | 2000                                           | 9.53837000 22                                                                  | 9.49952180 03                                              |
| 2000                                           | 2010                                           | 9.44363860 22                                                                  | 9.35826720 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 4500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 9.03553470 23                                                                | 8.76250560 04                                             |
| 2100                                   | 2200                                   | 8.19406060 23                                                                | 7.57651580 04                                             |
| 2200                                   | 2300                                   | 7.44686820 23                                                                | 6.57934170 04                                             |
| 2300                                   | 2400                                   | 6.78251540 23                                                                | 5.73717960 04                                             |
| 2400                                   | 2500                                   | 6.19084450 23                                                                | 5.02279080 04                                             |
| 2500                                   | 2600                                   | 5.66292150 23                                                                | 4.41416700 04                                             |
| 2600                                   | 2700                                   | 5.19093470 23                                                                | 3.89346620 04                                             |
| 2700                                   | 2800                                   | 4.76807760 23                                                                | 3.44617020 04                                             |
| 2800                                   | 2900                                   | 4.38843030 23                                                                | 3.06041820 04                                             |
| 2900                                   | 3000                                   | 4.04694830 23                                                                | 2.72648110 04                                             |
| 3000                                   | 3200                                   | 7.19943700 23                                                                | 4.61972900 04                                             |
| 3200                                   | 3400                                   | 6.18862870 23                                                                | 3.72997100 04                                             |
| 3400                                   | 3600                                   | 5.35514260 23                                                                | 3.04285550 04                                             |
| 3600                                   | 3800                                   | 4.66254230 23                                                                | 2.50587670 04                                             |
| 3800                                   | 4000                                   | 4.08279760 23                                                                | 2.08160100 04                                             |
| 4000                                   | 4200                                   | 3.59417530 23                                                                | 1.74296950 04                                             |
| 4200                                   | 4400                                   | 3.17958980 23                                                                | 1.47016000 04                                             |
| 4400                                   | 4600                                   | 2.72596080 23                                                                | 1.24847250 04                                             |
| 4600                                   | 4800                                   | 2.52236650 23                                                                | 1.06687970 04                                             |
| 4800                                   | 5000                                   | 2.26041250 23                                                                | 9.17019940 03                                             |
| 5000                                   | 5500                                   | 4.71994820 23                                                                | 1.79122260 04                                             |
| 5500                                   | 6000                                   | 3.69655260 23                                                                | 1.28029170 04                                             |
| 6000                                   | 6500                                   | 2.94778300 23                                                                | 9.38957450 03                                             |
| 6500                                   | 7000                                   | 2.38769960 23                                                                | 7.04024200 03                                             |
| 7000                                   | 7500                                   | 1.96060180 23                                                                | 5.38105200 03                                             |
| 7500                                   | 8000                                   | 1.62935220 23                                                                | 4.18264090 03                                             |
| 8000                                   | 8500                                   | 1.36856350 23                                                                | 3.29976660 03                                             |
| 8500                                   | 9000                                   | 1.16049060 23                                                                | 2.63735690 03                                             |
| 9000                                   | 9500                                   | 9.92481460 22                                                                | 2.13379330 03                                             |
| 9500                                   | 10000                                  | 8.55355220 22                                                                | 1.74451210 03                                             |
| 10000                                  | 11000                                  | 1.39070270 23                                                                | 2.63921170 03                                             |
| 11000                                  | 12000                                  | 1.07265220 23                                                                | 1.85773750 03                                             |
| 12000                                  | 13000                                  | 8.44596720 22                                                                | 1.34525070 03                                             |
| 13000                                  | 14000                                  | 6.76843140 22                                                                | 9.97912000 02                                             |
| 14000                                  | 15000                                  | 5.50715320 22                                                                | 7.55781120 02                                             |
| 15000                                  | 16000                                  | 4.54067230 22                                                                | 5.82831350 02                                             |

R.K.H. Gebel. Blackbody functions.  
Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 5000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 5.53746110 22                                                                | 3.60583770 04                                             |
| 310                                    | 320                                    | 6.56587520 22                                                                | 4.13998780 04                                             |
| 320                                    | 330                                    | 7.67427380 22                                                                | 4.69018150 04                                             |
| 330                                    | 340                                    | 8.85427970 22                                                                | 5.25001350 04                                             |
| 340                                    | 350                                    | 1.00966160 23                                                                | 5.81330240 04                                             |
| 350                                    | 360                                    | 1.13914210 23                                                                | 6.37423500 04                                             |
| 360                                    | 370                                    | 1.27285290 23                                                                | 6.92747070 04                                             |
| 370                                    | 380                                    | 1.40977250 23                                                                | 7.46821230 04                                             |
| 380                                    | 390                                    | 1.54889630 23                                                                | 7.99224620 04                                             |
| 390                                    | 400                                    | 1.68925350 23                                                                | 8.49595820 04                                             |
| 400                                    | 410                                    | 1.82992190 23                                                                | 8.97632800 04                                             |
| 410                                    | 420                                    | 1.97003830 23                                                                | 9.43090890 04                                             |
| 420                                    | 430                                    | 2.10880610 23                                                                | 9.85779630 04                                             |
| 430                                    | 440                                    | 2.24550020 23                                                                | 1.02555870 05                                             |
| 440                                    | 450                                    | 2.37946960 23                                                                | 1.06233360 05                                             |
| 450                                    | 460                                    | 2.51013820 23                                                                | 1.09605070 05                                             |
| 460                                    | 470                                    | 2.63700350 23                                                                | 1.12669250 05                                             |
| 470                                    | 480                                    | 2.75963480 23                                                                | 1.15427310 05                                             |
| 480                                    | 490                                    | 2.87767020 23                                                                | 1.17883340 05                                             |
| 490                                    | 500                                    | 2.99081230 23                                                                | 1.20043720 05                                             |
| 500                                    | 510                                    | 3.09882420 23                                                                | 1.21916680 05                                             |
| 510                                    | 520                                    | 3.20152500 23                                                                | 1.23511990 05                                             |
| 520                                    | 530                                    | 3.29878490 23                                                                | 1.24840590 05                                             |
| 530                                    | 540                                    | 3.39052050 23                                                                | 1.25914350 05                                             |
| 540                                    | 550                                    | 3.47669000 23                                                                | 1.26745770 05                                             |
| 550                                    | 560                                    | 3.55728890 23                                                                | 1.27347790 05                                             |
| 560                                    | 570                                    | 3.63234550 23                                                                | 1.27733570 05                                             |
| 570                                    | 580                                    | 3.70191660 23                                                                | 1.27916370 05                                             |
| 580                                    | 590                                    | 3.76608390 23                                                                | 1.27909370 05                                             |
| 590                                    | 600                                    | 3.82495050 23                                                                | 1.27725580 05                                             |
| 600                                    | 610                                    | 3.87863720 23                                                                | 1.27377740 05                                             |
| 610                                    | 620                                    | 3.92727990 23                                                                | 1.26878240 05                                             |
| 620                                    | 630                                    | 3.97102680 23                                                                | 1.26239070 05                                             |
| 630                                    | 640                                    | 4.01003560 23                                                                | 1.25471770 05                                             |
| 640                                    | 650                                    | 4.04447170 23                                                                | 1.24587390 05                                             |
| 650                                    | 660                                    | 4.07450600 23                                                                | 1.23596470 05                                             |
| 660                                    | 670                                    | 4.10031320 23                                                                | 1.22509050 05                                             |
| 670                                    | 680                                    | 4.12207050 23                                                                | 1.21334630 05                                             |
| 680                                    | 690                                    | 4.13995560 23                                                                | 1.20082170 05                                             |
| 690                                    | 700                                    | 4.15414630 23                                                                | 1.18760130 05                                             |
| 700                                    | 710                                    | 4.16481920 23                                                                | 1.17376450 05                                             |
| 710                                    | 720                                    | 4.17214850 23                                                                | 1.15938550 05                                             |
| 720                                    | 730                                    | 4.17630600 23                                                                | 1.14453380 05                                             |
| 730                                    | 740                                    | 4.17745970 23                                                                | 1.12927420 05                                             |
| 740                                    | 750                                    | 4.17577390 23                                                                | 1.11366700 05                                             |
| 750                                    | 760                                    | 4.17140850 23                                                                | 1.09776790 05                                             |
| 760                                    | 770                                    | 4.16451870 23                                                                | 1.08162880 05                                             |
| 770                                    | 780                                    | 4.15525480 23                                                                | 1.06529750 05                                             |
| 780                                    | 790                                    | 4.14376220 23                                                                | 1.04881810 05                                             |
| 790                                    | 800                                    | 4.13018080 23                                                                | 1.03223130 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 5000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 4.11464540 23                                                                | 1.01557420 05                                             |
| 810                                    | 820                                    | 4.0728540 23                                                                 | 9.98881090 04                                             |
| 820                                    | 830                                    | 4.07822500 23                                                                | 9.82183070 04                                             |
| 830                                    | 840                                    | 4.05758290 23                                                                | 9.65508620 04                                             |
| 840                                    | 850                                    | 4.03547260 23                                                                | 9.48883600 04                                             |
| 850                                    | 860                                    | 4.01200260 23                                                                | 9.32331470 04                                             |
| 860                                    | 870                                    | 3.98727630 23                                                                | 9.15873460 04                                             |
| 870                                    | 880                                    | 3.96139200 23                                                                | 8.99528070 04                                             |
| 880                                    | 890                                    | 3.93444340 23                                                                | 8.83314300 04                                             |
| 890                                    | 900                                    | 3.90651930 23                                                                | 8.67245700 04                                             |
| 900                                    | 910                                    | 3.87770430 23                                                                | 8.51336590 04                                             |
| 910                                    | 920                                    | 3.84807820 23                                                                | 8.35599090 04                                             |
| 920                                    | 930                                    | 3.81771690 23                                                                | 8.20043930 04                                             |
| 930                                    | 940                                    | 3.78669200 23                                                                | 8.04580490 04                                             |
| 940                                    | 950                                    | 3.75507140 23                                                                | 7.89516940 04                                             |
| 950                                    | 960                                    | 3.72291910 23                                                                | 7.74560320 04                                             |
| 960                                    | 970                                    | 3.69029540 23                                                                | 7.59816640 04                                             |
| 970                                    | 980                                    | 3.65725730 23                                                                | 7.45290940 04                                             |
| 980                                    | 990                                    | 3.62385850 23                                                                | 7.30987410 04                                             |
| 990                                    | 1000                                   | 3.59014950 23                                                                | 7.16909430 04                                             |
| 1000                                   | 1010                                   | 3.55617770 23                                                                | 7.03059670 04                                             |
| 1010                                   | 1020                                   | 3.52198770 23                                                                | 6.89440090 04                                             |
| 1020                                   | 1030                                   | 3.48762140 23                                                                | 6.76052080 04                                             |
| 1030                                   | 1040                                   | 3.45311800 23                                                                | 6.62896470 04                                             |
| 1040                                   | 1050                                   | 3.41851430 23                                                                | 6.49973560 04                                             |
| 1050                                   | 1060                                   | 3.38384470 23                                                                | 6.37283240 04                                             |
| 1060                                   | 1070                                   | 3.34914150 23                                                                | 6.24824940 04                                             |
| 1070                                   | 1080                                   | 3.31443460 23                                                                | 6.12597760 04                                             |
| 1080                                   | 1090                                   | 3.27975210 23                                                                | 6.00600430 04                                             |
| 1090                                   | 1100                                   | 3.24512020 23                                                                | 5.88831400 04                                             |
| 1100                                   | 1110                                   | 3.21056310 23                                                                | 5.77288860 04                                             |
| 1110                                   | 1120                                   | 3.17610360 23                                                                | 5.65970740 04                                             |
| 1120                                   | 1130                                   | 3.14176260 23                                                                | 5.54874760 04                                             |
| 1130                                   | 1140                                   | 3.10755960 23                                                                | 5.43998460 04                                             |
| 1140                                   | 1150                                   | 3.07351260 23                                                                | 5.33339230 04                                             |
| 1150                                   | 1160                                   | 3.03963840 23                                                                | 5.22894280 04                                             |
| 1160                                   | 1170                                   | 3.00595220 23                                                                | 5.12660720 04                                             |
| 1170                                   | 1180                                   | 2.97246830 23                                                                | 5.02635560 04                                             |
| 1180                                   | 1190                                   | 2.93919970 23                                                                | 4.92815690 04                                             |
| 1190                                   | 1200                                   | 2.90615830 23                                                                | 4.83197950 04                                             |
| 1200                                   | 1210                                   | 2.87335500 23                                                                | 4.73779110 04                                             |
| 1210                                   | 1220                                   | 2.84079980 23                                                                | 4.64555880 04                                             |
| 1220                                   | 1230                                   | 2.80850180 23                                                                | 4.55524950 04                                             |
| 1230                                   | 1240                                   | 2.77646920 23                                                                | 4.46682970 04                                             |
| 1240                                   | 1250                                   | 2.74470930 23                                                                | 4.38026550 04                                             |
| 1250                                   | 1260                                   | 2.71322890 23                                                                | 4.29552340 04                                             |
| 1260                                   | 1270                                   | 2.68203380 23                                                                | 4.21256930 04                                             |
| 1270                                   | 1280                                   | 2.65112950 23                                                                | 4.13136950 04                                             |
| 1280                                   | 1290                                   | 2.62052060 23                                                                | 4.05189020 04                                             |
| 1290                                   | 1300                                   | 2.59021110 23                                                                | 3.97409790 04                                             |
| 1300                                   | 1310                                   | 2.56020460 23                                                                | 3.89795920 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 5000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 2.5305043D 23                                                                | 3.8234409D 04                                             |
| 1320                                   | 1330                                   | 2.5011125D 23                                                                | 3.7505102D 04                                             |
| 1330                                   | 1340                                   | 2.4720314D 23                                                                | 3.6791347D 04                                             |
| 1340                                   | 1350                                   | 2.4432628D 23                                                                | 3.6092819D 04                                             |
| 1350                                   | 1360                                   | 2.4148079D 23                                                                | 3.5409203D 04                                             |
| 1360                                   | 1370                                   | 2.3866677D 23                                                                | 3.4740184D 04                                             |
| 1370                                   | 1380                                   | 2.3588427D 23                                                                | 3.4085451D 04                                             |
| 1380                                   | 1390                                   | 2.3313333D 23                                                                | 3.3444701D 04                                             |
| 1390                                   | 1400                                   | 2.3041395D 23                                                                | 3.2817630D 04                                             |
| 1400                                   | 1410                                   | 2.2772609D 23                                                                | 3.2203945D 04                                             |
| 1410                                   | 1420                                   | 2.2506970D 23                                                                | 3.1603352D 04                                             |
| 1420                                   | 1430                                   | 2.2244470D 23                                                                | 3.1015566D 04                                             |
| 1430                                   | 1440                                   | 2.1985100D 23                                                                | 3.0440306D 04                                             |
| 1440                                   | 1450                                   | 2.1728847D 23                                                                | 2.9877294D 04                                             |
| 1450                                   | 1460                                   | 2.1475697D 23                                                                | 2.9326259D 04                                             |
| 1460                                   | 1470                                   | 2.1225636D 23                                                                | 2.8786934D 04                                             |
| 1470                                   | 1480                                   | 2.0978645D 23                                                                | 2.8259059D 04                                             |
| 1480                                   | 1490                                   | 2.0734706D 23                                                                | 2.7742377D 04                                             |
| 1490                                   | 1500                                   | 2.0493799D 23                                                                | 2.7236637D 04                                             |
| 1500                                   | 1510                                   | 2.0255903D 23                                                                | 2.6741593D 04                                             |
| 1510                                   | 1520                                   | 2.0020995D 23                                                                | 2.6257003D 04                                             |
| 1520                                   | 1530                                   | 1.9789052D 23                                                                | 2.5782631D 04                                             |
| 1530                                   | 1540                                   | 1.9560050D 23                                                                | 2.5318246D 04                                             |
| 1540                                   | 1550                                   | 1.9333963D 23                                                                | 2.4863623D 04                                             |
| 1550                                   | 1560                                   | 1.9110766D 23                                                                | 2.4418538D 04                                             |
| 1560                                   | 1570                                   | 1.8890432D 23                                                                | 2.3982776D 04                                             |
| 1570                                   | 1580                                   | 1.8672933D 23                                                                | 2.3556125D 04                                             |
| 1580                                   | 1590                                   | 1.8458242D 23                                                                | 2.3138377D 04                                             |
| 1590                                   | 1600                                   | 1.8246330D 23                                                                | 2.2729330D 04                                             |
| 1600                                   | 1610                                   | 1.8037169D 23                                                                | 2.2328785D 04                                             |
| 1610                                   | 1620                                   | 1.7830730D 23                                                                | 2.1936550D 04                                             |
| 1620                                   | 1630                                   | 1.7626983D 23                                                                | 2.1552433D 04                                             |
| 1630                                   | 1640                                   | 1.7425899D 23                                                                | 2.1176251D 04                                             |
| 1640                                   | 1650                                   | 1.7227448D 23                                                                | 2.0807823D 04                                             |
| 1650                                   | 1660                                   | 1.7031599D 23                                                                | 2.0445972D 04                                             |
| 1660                                   | 1670                                   | 1.6838323D 23                                                                | 2.0093526D 04                                             |
| 1670                                   | 1680                                   | 1.6647590D 23                                                                | 1.9747315D 04                                             |
| 1680                                   | 1690                                   | 1.6459368D 23                                                                | 1.9408177D 04                                             |
| 1690                                   | 1700                                   | 1.6273629D 23                                                                | 1.9075948D 04                                             |
| 1700                                   | 1710                                   | 1.6090340D 23                                                                | 1.8750474D 04                                             |
| 1710                                   | 1720                                   | 1.5909472D 23                                                                | 1.8431599D 04                                             |
| 1720                                   | 1730                                   | 1.5730995D 23                                                                | 1.8119176D 04                                             |
| 1730                                   | 1740                                   | 1.5554879D 23                                                                | 1.7813057D 04                                             |
| 1740                                   | 1750                                   | 1.5381093D 23                                                                | 1.7513100D 04                                             |
| 1750                                   | 1760                                   | 1.5209607D 23                                                                | 1.7219166D 04                                             |
| 1760                                   | 1770                                   | 1.5040391D 23                                                                | 1.6931118D 04                                             |
| 1770                                   | 1780                                   | 1.4873416D 23                                                                | 1.6648824D 04                                             |
| 1780                                   | 1790                                   | 1.4708653D 23                                                                | 1.6372154D 04                                             |
| 1790                                   | 1800                                   | 1.4546071D 23                                                                | 1.6100983D 04                                             |
| 1800                                   | 1810                                   | 1.4385642D 23                                                                | 1.5835185D 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 5000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 1.42273370 23                                                                | 1.55746420 04                                             |
| 1820                                   | 1830                                   | 1.40711270 23                                                                | 1.53192340 04                                             |
| 1830                                   | 1840                                   | 1.39169840 23                                                                | 1.50688490 04                                             |
| 1840                                   | 1850                                   | 1.37648790 23                                                                | 1.48233720 04                                             |
| 1850                                   | 1860                                   | 1.36147850 23                                                                | 1.45826960 04                                             |
| 1860                                   | 1870                                   | 1.34666730 23                                                                | 1.43467130 04                                             |
| 1870                                   | 1880                                   | 1.33205170 23                                                                | 1.41153190 04                                             |
| 1880                                   | 1890                                   | 1.31762890 23                                                                | 1.38884120 04                                             |
| 1890                                   | 1900                                   | 1.303339610 23                                                               | 1.36658940 04                                             |
| 1900                                   | 1910                                   | 1.28935090 23                                                                | 1.34476670 04                                             |
| 1910                                   | 1920                                   | 1.27549050 23                                                                | 1.32336370 04                                             |
| 1920                                   | 1930                                   | 1.26181230 23                                                                | 1.30237120 04                                             |
| 1930                                   | 1940                                   | 1.24831380 23                                                                | 1.28178010 04                                             |
| 1940                                   | 1950                                   | 1.23499230 23                                                                | 1.26158170 04                                             |
| 1950                                   | 1960                                   | 1.22184550 23                                                                | 1.24176730 04                                             |
| 1960                                   | 1970                                   | 1.20887080 23                                                                | 1.22232870 04                                             |
| 1970                                   | 1980                                   | 1.19606580 23                                                                | 1.20325750 04                                             |
| 1980                                   | 1990                                   | 1.18342790 23                                                                | 1.18454600 04                                             |
| 1990                                   | 2000                                   | 1.17095500 23                                                                | 1.16618610 04                                             |
| 2000                                   | 2010                                   | 1.15864450 23                                                                | 1.14817050 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

T = 5000°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 2000                                   | 2100                                   | 1.10581510 24                                           | 1.07242470 05                               |
| 2100                                   | 2200                                   | 9.97557710 23                                           | 9.22394660 04                               |
| 2200                                   | 2300                                   | 9.02303040 23                                           | 7.97202110 04                               |
| 2300                                   | 2400                                   | 8.18289540 23                                           | 6.92183020 04                               |
| 2400                                   | 2500                                   | 7.44002840 23                                           | 6.03636200 04                               |
| 2500                                   | 2600                                   | 6.78145200 23                                           | 5.28610430 04                               |
| 2600                                   | 2700                                   | 6.19606050 23                                           | 4.64740740 04                               |
| 2700                                   | 2800                                   | 5.67435130 23                                           | 4.10122310 04                               |
| 2800                                   | 2900                                   | 5.20818730 23                                           | 3.63213110 04                               |
| 2900                                   | 3000                                   | 4.79059140 23                                           | 3.22758510 04                               |
| 3000                                   | 3200                                   | 8.49353940 23                                           | 5.45025600 04                               |
| 3200                                   | 3400                                   | 7.27115820 23                                           | 4.38251080 04                               |
| 3400                                   | 3600                                   | 6.26937170 23                                           | 3.56238920 04                               |
| 3600                                   | 3800                                   | 5.44132670 23                                           | 2.92447220 04                               |
| 3800                                   | 4000                                   | 4.75141780 23                                           | 2.42252220 04                               |
| 4000                                   | 4200                                   | 4.17232260 23                                           | 2.02335730 04                               |
| 4200                                   | 4400                                   | 3.68287470 23                                           | 1.70282640 04                               |
| 4400                                   | 4600                                   | 3.26652780 23                                           | 1.44311960 04                               |
| 4600                                   | 4800                                   | 2.91023420 23                                           | 1.23094290 04                               |
| 4800                                   | 5000                                   | 2.60362080 23                                           | 1.05626090 04                               |
| 5000                                   | 5500                                   | 5.42290800 23                                           | 2.05805270 04                               |
| 5500                                   | 6000                                   | 4.23370870 23                                           | 1.46636460 04                               |
| 6000                                   | 6500                                   | 3.36731740 23                                           | 1.07260980 04                               |
| 6500                                   | 7000                                   | 2.72152550 23                                           | 8.02464300 03                               |
| 7000                                   | 7500                                   | 2.23052240 23                                           | 6.12193500 03                               |
| 7500                                   | 8000                                   | 1.85056680 23                                           | 4.75080650 03                               |
| 8000                                   | 8500                                   | 1.55225990 23                                           | 3.74270510 03                               |
| 8500                                   | 9000                                   | 1.31462320 23                                           | 2.98822510 03                               |
| 9000                                   | 9500                                   | 1.12306210 23                                           | 2.41454660 03                               |
| 9500                                   | 10000                                  | 9.66942650 22                                           | 1.97210450 03                               |
| 10000                                  | 11000                                  | 1.57015950 23                                           | 2.97981420 03                               |
| 11000                                  | 12000                                  | 1.20930360 23                                           | 2.09442540 03                               |
| 12000                                  | 13000                                  | 9.51039250 22                                           | 1.51480060 03                               |
| 13000                                  | 14000                                  | 7.61361650 22                                           | 1.12252940 03                               |
| 14000                                  | 15000                                  | 6.18939020 22                                           | 8.49412740 02                               |
| 15000                                  | 16000                                  | 5.09928910 22                                           | 6.54536750 02                               |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

T = 5500°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 300                                    | 310                                    | 1.3053239D 23                                           | 8.5005506D 04                               |
| 310                                    | 320                                    | 1.5062931D 23                                           | 9.4983055D 04                               |
| 320                                    | 330                                    | 1.7162883D 23                                           | 1.0489870D 05                               |
| 330                                    | 340                                    | 1.9333245D 23                                           | 1.1464023D 05                               |
| 340                                    | 350                                    | 2.1554186D 23                                           | 1.2410854D 05                               |
| 350                                    | 360                                    | 2.3806362D 23                                           | 1.3321842D 05                               |
| 360                                    | 370                                    | 2.6071311D 23                                           | 1.4189881D 05                               |
| 370                                    | 380                                    | 2.8331734D 23                                           | 1.5009237D 05                               |
| 380                                    | 390                                    | 3.0571710D 23                                           | 1.5775486D 05                               |
| 390                                    | 400                                    | 3.2776828D 23                                           | 1.6485409D 05                               |
| 400                                    | 410                                    | 3.4934257D 23                                           | 1.7136883D 05                               |
| 410                                    | 420                                    | 3.7032767D 23                                           | 1.7728753D 05                               |
| 420                                    | 430                                    | 3.9062709D 23                                           | 1.8260715D 05                               |
| 430                                    | 440                                    | 4.1015961D 23                                           | 1.8733189D 05                               |
| 440                                    | 450                                    | 4.2885851D 23                                           | 1.9147206D 05                               |
| 450                                    | 460                                    | 4.4667065D 23                                           | 1.9504299D 05                               |
| 460                                    | 470                                    | 4.6355539D 23                                           | 1.9806403D 05                               |
| 470                                    | 480                                    | 4.7948354D 23                                           | 2.0055770D 05                               |
| 480                                    | 490                                    | 4.9443619D 23                                           | 2.0254887D 05                               |
| 490                                    | 500                                    | 5.0840362D 23                                           | 2.0406409D 05                               |
| 500                                    | 510                                    | 5.2138424D 23                                           | 2.0513100D 05                               |
| 510                                    | 520                                    | 5.3338352D 23                                           | 2.0577784D 05                               |
| 520                                    | 530                                    | 5.4441303D 23                                           | 2.0603298D 05                               |
| 530                                    | 540                                    | 5.5448956D 23                                           | 2.0592462D 05                               |
| 540                                    | 550                                    | 5.6363427D 23                                           | 2.0548049D 05                               |
| 550                                    | 560                                    | 5.7187193D 23                                           | 2.0472761D 05                               |
| 560                                    | 570                                    | 5.7923027D 23                                           | 2.0369212D 05                               |
| 570                                    | 580                                    | 5.8573931D 23                                           | 2.0239915D 05                               |
| 580                                    | 590                                    | 5.9143086D 23                                           | 2.0087270D 05                               |
| 590                                    | 600                                    | 5.9633804D 23                                           | 1.9913560D 05                               |
| 600                                    | 610                                    | 6.0049482D 23                                           | 1.9720947D 05                               |
| 610                                    | 620                                    | 6.0393570D 23                                           | 1.9511466D 05                               |
| 620                                    | 630                                    | 6.0669533D 23                                           | 1.9287029D 05                               |
| 630                                    | 640                                    | 6.0880832D 23                                           | 1.9049426D 05                               |
| 640                                    | 650                                    | 6.1030895D 23                                           | 1.8800326D 05                               |
| 650                                    | 660                                    | 6.1123099D 23                                           | 1.8541278D 05                               |
| 660                                    | 670                                    | 6.1160756D 23                                           | 1.8273723D 05                               |
| 670                                    | 680                                    | 6.1147096D 23                                           | 1.7998989D 05                               |
| 680                                    | 690                                    | 6.1085263D 23                                           | 1.7718301D 05                               |
| 690                                    | 700                                    | 6.0978300D 23                                           | 1.7432788D 05                               |
| 700                                    | 710                                    | 6.0829146D 23                                           | 1.7143483D 05                               |
| 710                                    | 720                                    | 6.0640631D 23                                           | 1.6851332D 05                               |
| 720                                    | 730                                    | 6.0415474D 23                                           | 1.6557197D 05                               |
| 730                                    | 740                                    | 6.0156281D 23                                           | 1.6261865D 05                               |
| 740                                    | 750                                    | 5.9865542D 23                                           | 1.5966047D 05                               |
| 750                                    | 760                                    | 5.9545633D 23                                           | 1.5670388D 05                               |
| 760                                    | 770                                    | 5.9198820D 23                                           | 1.5375471D 05                               |
| 770                                    | 780                                    | 5.8827255D 23                                           | 1.5081818D 05                               |
| 780                                    | 790                                    | 5.8432980D 23                                           | 1.4789899D 05                               |
| 790                                    | 800                                    | 5.8017933D 23                                           | 1.4500132D 05                               |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 5500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 5.75839480 23                                                                | 1.42128890 05                                             |
| 810                                    | 820                                    | 5.71327570 23                                                                | 1.39285000 05                                             |
| 820                                    | 830                                    | 5.66659970 23                                                                | 1.36472560 05                                             |
| 830                                    | 840                                    | 5.61852100 23                                                                | 1.33694100 05                                             |
| 840                                    | 850                                    | 5.56918480 23                                                                | 1.30951830 05                                             |
| 850                                    | 860                                    | 5.51872780 23                                                                | 1.28247670 05                                             |
| 860                                    | 870                                    | 5.46727840 23                                                                | 1.25583230 05                                             |
| 870                                    | 880                                    | 5.41495710 23                                                                | 1.22959870 05                                             |
| 880                                    | 890                                    | 5.36187690 23                                                                | 1.20378800 05                                             |
| 890                                    | 900                                    | 5.30814360 23                                                                | 1.17840890 05                                             |
| 900                                    | 910                                    | 5.25385620 23                                                                | 1.15346900 05                                             |
| 910                                    | 920                                    | 5.19910720 23                                                                | 1.12897400 05                                             |
| 920                                    | 930                                    | 5.14398300 23                                                                | 1.10492800 05                                             |
| 930                                    | 940                                    | 5.08856410 23                                                                | 1.08133380 05                                             |
| 940                                    | 950                                    | 5.03292560 23                                                                | 1.05819270 05                                             |
| 950                                    | 960                                    | 4.97713720 23                                                                | 1.03550500 05                                             |
| 960                                    | 970                                    | 4.92126380 23                                                                | 1.01327010 05                                             |
| 970                                    | 980                                    | 4.86536570 23                                                                | 9.91486260 04                                             |
| 980                                    | 990                                    | 4.80949860 23                                                                | 9.70150980 04                                             |
| 990                                    | 1000                                   | 4.75371430 23                                                                | 9.49261080 04                                             |
| 1000                                   | 1010                                   | 4.69806050 23                                                                | 9.28812690 04                                             |
| 1010                                   | 1020                                   | 4.64258130 23                                                                | 9.08801420 04                                             |
| 1020                                   | 1030                                   | 4.58731730 23                                                                | 8.89222330 04                                             |
| 1030                                   | 1040                                   | 4.53230600 23                                                                | 8.70070090 04                                             |
| 1040                                   | 1050                                   | 4.47758160 23                                                                | 8.51338970 04                                             |
| 1050                                   | 1060                                   | 4.42317570 23                                                                | 8.33022910 04                                             |
| 1060                                   | 1070                                   | 4.36911700 23                                                                | 8.15115600 04                                             |
| 1070                                   | 1080                                   | 4.31543180 23                                                                | 7.97610480 04                                             |
| 1080                                   | 1090                                   | 4.26214390 23                                                                | 7.80500810 04                                             |
| 1090                                   | 1100                                   | 4.20927510 23                                                                | 7.63779680 04                                             |
| 1100                                   | 1110                                   | 4.15684490 23                                                                | 7.47440070 04                                             |
| 1110                                   | 1120                                   | 4.10487100 23                                                                | 7.31474860 04                                             |
| 1120                                   | 1130                                   | 4.05336930 23                                                                | 7.15876870 04                                             |
| 1130                                   | 1140                                   | 4.00235380 23                                                                | 7.00638860 04                                             |
| 1140                                   | 1150                                   | 3.95183720 23                                                                | 6.85753590 04                                             |
| 1150                                   | 1160                                   | 3.90183050 23                                                                | 6.71213800 04                                             |
| 1160                                   | 1170                                   | 3.85234350 23                                                                | 6.57012260 04                                             |
| 1170                                   | 1180                                   | 3.80338460 23                                                                | 6.43141740 04                                             |
| 1180                                   | 1190                                   | 3.75496090 23                                                                | 6.29595080 04                                             |
| 1190                                   | 1200                                   | 3.70707870 23                                                                | 6.16365170 04                                             |
| 1200                                   | 1210                                   | 3.65974310 23                                                                | 6.03444950 04                                             |
| 1210                                   | 1220                                   | 3.61295800 23                                                                | 5.90827470 04                                             |
| 1220                                   | 1230                                   | 3.56672680 23                                                                | 5.78505820 04                                             |
| 1230                                   | 1240                                   | 3.52105180 23                                                                | 5.66473200 04                                             |
| 1240                                   | 1250                                   | 3.47593470 23                                                                | 5.54722910 04                                             |
| 1250                                   | 1260                                   | 3.43137640 23                                                                | 5.43248350 04                                             |
| 1260                                   | 1270                                   | 3.38737720 23                                                                | 5.32043020 04                                             |
| 1270                                   | 1280                                   | 3.34393670 23                                                                | 5.21100520 04                                             |
| 1280                                   | 1290                                   | 3.30105400 23                                                                | 5.10414590 04                                             |
| 1290                                   | 1300                                   | 3.25872760 23                                                                | 4.99979060 04                                             |
| 1300                                   | 1310                                   | 3.21695570 23                                                                | 4.89787880 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 5500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 3.17573600 23                                                                | 4.79835120 04                                             |
| 1320                                   | 1330                                   | 3.13506560 23                                                                | 4.70114990 04                                             |
| 1330                                   | 1340                                   | 3.09494160 23                                                                | 4.60621780 04                                             |
| 1340                                   | 1350                                   | 3.05536040 23                                                                | 4.51349930 04                                             |
| 1350                                   | 1360                                   | 3.01631830 23                                                                | 4.42293990 04                                             |
| 1360                                   | 1370                                   | 2.97781130 23                                                                | 4.33448620 04                                             |
| 1370                                   | 1380                                   | 2.93983510 23                                                                | 4.24808620 04                                             |
| 1380                                   | 1390                                   | 2.90238520 23                                                                | 4.16368890 04                                             |
| 1390                                   | 1400                                   | 2.86545690 23                                                                | 4.08124450 04                                             |
| 1400                                   | 1410                                   | 2.82904540 23                                                                | 4.00070440 04                                             |
| 1410                                   | 1420                                   | 2.79314540 23                                                                | 3.92202120 04                                             |
| 1420                                   | 1430                                   | 2.75775200 23                                                                | 3.84514850 04                                             |
| 1430                                   | 1440                                   | 2.72285960 23                                                                | 3.77004100 04                                             |
| 1440                                   | 1450                                   | 2.68846290 23                                                                | 3.69665460 04                                             |
| 1450                                   | 1460                                   | 2.65455630 23                                                                | 3.62494620 04                                             |
| 1460                                   | 1470                                   | 2.62113420 23                                                                | 3.55487400 04                                             |
| 1470                                   | 1480                                   | 2.58819090 23                                                                | 3.48639680 04                                             |
| 1480                                   | 1490                                   | 2.55572070 23                                                                | 3.41947480 04                                             |
| 1490                                   | 1500                                   | 2.52371760 23                                                                | 3.35406900 04                                             |
| 1500                                   | 1510                                   | 2.49217600 23                                                                | 3.29014150 04                                             |
| 1510                                   | 1520                                   | 2.46108980 23                                                                | 3.22765530 04                                             |
| 1520                                   | 1530                                   | 2.43045320 23                                                                | 3.16657440 04                                             |
| 1530                                   | 1540                                   | 2.40026020 23                                                                | 3.10686360 04                                             |
| 1540                                   | 1550                                   | 2.37050510 23                                                                | 3.04848870 04                                             |
| 1550                                   | 1560                                   | 2.34118170 23                                                                | 2.99141650 04                                             |
| 1560                                   | 1570                                   | 2.31228430 23                                                                | 2.93561430 04                                             |
| 1570                                   | 1580                                   | 2.28380700 23                                                                | 2.88105060 04                                             |
| 1580                                   | 1590                                   | 2.25574370 23                                                                | 2.82769470 04                                             |
| 1590                                   | 1600                                   | 2.22808890 23                                                                | 2.77551640 04                                             |
| 1600                                   | 1610                                   | 2.20083640 23                                                                | 2.72448650 04                                             |
| 1610                                   | 1620                                   | 2.17398070 23                                                                | 2.67457670 04                                             |
| 1620                                   | 1630                                   | 2.14751600 23                                                                | 2.62575920 04                                             |
| 1630                                   | 1640                                   | 2.12143650 23                                                                | 2.57800700 04                                             |
| 1640                                   | 1650                                   | 2.09573650 23                                                                | 2.53129380 04                                             |
| 1650                                   | 1660                                   | 2.07041060 23                                                                | 2.48559410 04                                             |
| 1660                                   | 1670                                   | 2.04545300 23                                                                | 2.44088300 04                                             |
| 1670                                   | 1680                                   | 2.02085820 23                                                                | 2.39713610 04                                             |
| 1680                                   | 1690                                   | 1.99662090 23                                                                | 2.35432990 04                                             |
| 1690                                   | 1700                                   | 1.97273560 23                                                                | 2.31244150 04                                             |
| 1700                                   | 1710                                   | 1.94919680 23                                                                | 2.27144830 04                                             |
| 1710                                   | 1720                                   | 1.92599950 23                                                                | 2.23132870 04                                             |
| 1720                                   | 1730                                   | 1.90313820 23                                                                | 2.19206130 04                                             |
| 1730                                   | 1740                                   | 1.88060790 23                                                                | 2.15362560 04                                             |
| 1740                                   | 1750                                   | 1.85840340 23                                                                | 2.11600140 04                                             |
| 1750                                   | 1760                                   | 1.83651960 23                                                                | 2.07916910 04                                             |
| 1760                                   | 1770                                   | 1.81495160 23                                                                | 2.04310970 04                                             |
| 1770                                   | 1780                                   | 1.79369450 23                                                                | 2.00780450 04                                             |
| 1780                                   | 1790                                   | 1.77274340 23                                                                | 1.97323560 04                                             |
| 1790                                   | 1800                                   | 1.75209360 23                                                                | 1.93938520 04                                             |
| 1800                                   | 1810                                   | 1.73174020 23                                                                | 1.90623630 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 5500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 1.71167860 23                                                                  | 1.87377210 04                                              |
| 1820                                           | 1830                                           | 1.69190420 23                                                                  | 1.84197630 04                                              |
| 1830                                           | 1840                                           | 1.67241260 23                                                                  | 1.81083330 04                                              |
| 1840                                           | 1850                                           | 1.65319910 23                                                                  | 1.78032740 04                                              |
| 1850                                           | 1860                                           | 1.63425950 23                                                                  | 1.75044370 04                                              |
| 1860                                           | 1870                                           | 1.61558930 23                                                                  | 1.72116760 04                                              |
| 1870                                           | 1880                                           | 1.59718440 23                                                                  | 1.69248480 04                                              |
| 1880                                           | 1890                                           | 1.57904050 23                                                                  | 1.66438150 04                                              |
| 1890                                           | 1900                                           | 1.56115340 23                                                                  | 1.63684410 04                                              |
| 1900                                           | 1910                                           | 1.54351910 23                                                                  | 1.60985940 04                                              |
| 1910                                           | 1920                                           | 1.52613360 23                                                                  | 1.58341460 04                                              |
| 1920                                           | 1930                                           | 1.50899280 23                                                                  | 1.55749730 04                                              |
| 1930                                           | 1940                                           | 1.49209300 23                                                                  | 1.53209520 04                                              |
| 1940                                           | 1950                                           | 1.47543020 23                                                                  | 1.50719640 04                                              |
| 1950                                           | 1960                                           | 1.45900070 23                                                                  | 1.48278950 04                                              |
| 1960                                           | 1970                                           | 1.44280080 23                                                                  | 1.45886320 04                                              |
| 1970                                           | 1980                                           | 1.42682680 23                                                                  | 1.43540640 04                                              |
| 1980                                           | 1990                                           | 1.41107510 23                                                                  | 1.41240850 04                                              |
| 1990                                           | 2000                                           | 1.39554230 23                                                                  | 1.38985910 04                                              |
| 2000                                           | 2010                                           | 1.38022470 23                                                                  | 1.36774790 04                                              |

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Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 5500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 1.31468330 24                                                                  | 1.27500890 05                                              |
| 2100                                           | 2200                                           | 1.18100690 24                                                                  | 1.09203830 05                                              |
| 2200                                           | 2300                                           | 1.06420390 24                                                                  | 9.40257150 04                                              |
| 2300                                           | 2400                                           | 9.61820940 23                                                                  | 8.13604200 04                                              |
| 2400                                           | 2500                                           | 8.71790930 23                                                                  | 7.07322380 04                                              |
| 2500                                           | 2600                                           | 7.92372170 23                                                                  | 6.17655190 04                                              |
| 2600                                           | 2700                                           | 7.22095360 23                                                                  | 5.41617940 04                                              |
| 2700                                           | 2800                                           | 6.59718650 23                                                                  | 4.76824920 04                                              |
| 2800                                           | 2900                                           | 6.04190000 23                                                                  | 4.21357900 04                                              |
| 2900                                           | 3000                                           | 5.54615860 23                                                                  | 3.73665720 04                                              |
| 3000                                           | 3200                                           | 9.80632760 23                                                                  | 6.29278340 04                                              |
| 3200                                           | 3400                                           | 8.36748890 23                                                                  | 5.04337480 04                                              |
| 3400                                           | 3600                                           | 7.19396700 23                                                                  | 4.08781610 04                                              |
| 3600                                           | 3800                                           | 6.22801560 23                                                                  | 3.34731850 04                                              |
| 3800                                           | 4000                                           | 5.42614830 23                                                                  | 2.76656020 04                                              |
| 4000                                           | 4200                                           | 4.75525180 23                                                                  | 2.30606510 04                                              |
| 4200                                           | 4400                                           | 4.18984430 23                                                                  | 1.93724340 04                                              |
| 4400                                           | 4600                                           | 3.71012110 23                                                                  | 1.63910410 04                                              |
| 4600                                           | 4800                                           | 3.30054470 23                                                                  | 1.39603970 04                                              |
| 4800                                           | 5000                                           | 2.94881810 23                                                                  | 1.19630890 04                                              |
| 5000                                           | 5500                                           | 6.12943740 23                                                                  | 2.32623970 04                                              |
| 5500                                           | 6000                                           | 4.77313730 23                                                                  | 1.65322570 04                                              |
| 6000                                           | 6500                                           | 3.78835330 23                                                                  | 1.20673890 04                                              |
| 6500                                           | 7000                                           | 3.05637530 23                                                                  | 9.01206610 03                                              |
| 7000                                           | 7500                                           | 2.50116040 23                                                                  | 6.86478860 03                                              |
| 7500                                           | 8000                                           | 2.07249590 23                                                                  | 5.32029420 03                                              |
| 8000                                           | 8500                                           | 1.73633320 23                                                                  | 4.18655280 03                                              |
| 8500                                           | 9000                                           | 1.46903680 23                                                                  | 3.33923260 03                                              |
| 9000                                           | 9500                                           | 1.25385540 23                                                                  | 2.69575800 03                                              |
| 9500                                           | 10000                                          | 1.07869390 23                                                                  | 2.20003110 03                                              |
| 10000                                          | 11000                                          | 1.74984460 23                                                                  | 3.32085070 03                                              |
| 11000                                          | 12000                                          | 1.34609980 23                                                                  | 2.33136440 03                                              |
| 12000                                          | 13000                                          | 1.05757720 23                                                                  | 1.68450270 03                                              |
| 13000                                          | 14000                                          | 8.45945040 22                                                                  | 1.24724260 03                                              |
| 14000                                          | 15000                                          | 6.87208090 22                                                                  | 9.43106700 02                                              |
| 15000                                          | 16000                                          | 5.65823090 22                                                                  | 7.26283900 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 2.66763280 23                                                                | 1.73733080 05                                             |
| 310                                    | 320                                    | 3.00953620 23                                                                | 1.89784770 05                                             |
| 320                                    | 330                                    | 3.35714500 23                                                                | 2.05197890 05                                             |
| 330                                    | 340                                    | 3.70704870 23                                                                | 2.19827220 05                                             |
| 340                                    | 350                                    | 4.05606800 23                                                                | 2.33557800 05                                             |
| 350                                    | 360                                    | 4.40130050 23                                                                | 2.46303060 05                                             |
| 360                                    | 370                                    | 4.74014880 23                                                                | 2.58002530 05                                             |
| 370                                    | 380                                    | 5.07033400 23                                                                | 2.68619100 05                                             |
| 380                                    | 390                                    | 5.38989750 23                                                                | 2.78136020 05                                             |
| 390                                    | 400                                    | 5.69719380 23                                                                | 2.86554010 05                                             |
| 400                                    | 410                                    | 5.99087650 23                                                                | 2.93888390 05                                             |
| 410                                    | 420                                    | 6.26987910 23                                                                | 3.00166410 05                                             |
| 420                                    | 430                                    | 6.53339310 23                                                                | 3.05424830 05                                             |
| 430                                    | 440                                    | 6.78084420 23                                                                | 3.09707720 05                                             |
| 440                                    | 450                                    | 7.01186790 23                                                                | 3.13064560 05                                             |
| 450                                    | 460                                    | 7.22628490 23                                                                | 3.15548580 05                                             |
| 460                                    | 470                                    | 7.42407770 23                                                                | 3.17215340 05                                             |
| 470                                    | 480                                    | 7.60536810 23                                                                | 3.18121550 05                                             |
| 480                                    | 490                                    | 7.77039620 23                                                                | 3.18324080 05                                             |
| 490                                    | 500                                    | 7.91950100 23                                                                | 3.17979200 05                                             |
| 500                                    | 510                                    | 8.05310320 23                                                                | 3.16841910 05                                             |
| 510                                    | 520                                    | 8.17166880 23                                                                | 3.15265480 05                                             |
| 520                                    | 530                                    | 8.27579550 23                                                                | 3.13201080 05                                             |
| 530                                    | 540                                    | 8.36599990 23                                                                | 3.10697480 05                                             |
| 540                                    | 550                                    | 8.44290680 23                                                                | 3.07800910 05                                             |
| 550                                    | 560                                    | 8.50713970 23                                                                | 3.04554930 05                                             |
| 560                                    | 570                                    | 8.55933240 23                                                                | 3.01000400 05                                             |
| 570                                    | 580                                    | 8.60012240 23                                                                | 2.97175430 05                                             |
| 580                                    | 590                                    | 8.63014490 23                                                                | 2.93115490 05                                             |
| 590                                    | 600                                    | 8.65002800 23                                                                | 2.88853390 05                                             |
| 600                                    | 610                                    | 8.66038840 23                                                                | 2.84419420 05                                             |
| 610                                    | 620                                    | 8.66182870 23                                                                | 2.79841420 05                                             |
| 620                                    | 630                                    | 8.65493400 23                                                                | 2.75144920 05                                             |
| 630                                    | 640                                    | 8.64027090 23                                                                | 2.70353240 05                                             |
| 640                                    | 650                                    | 8.61838490 23                                                                | 2.65487620 05                                             |
| 650                                    | 660                                    | 8.58980030 23                                                                | 2.60567360 05                                             |
| 660                                    | 670                                    | 8.55501890 23                                                                | 2.55609900 05                                             |
| 670                                    | 680                                    | 8.51451950 23                                                                | 2.50631000 05                                             |
| 680                                    | 690                                    | 8.46875840 23                                                                | 2.45644840 05                                             |
| 690                                    | 700                                    | 8.41816870 23                                                                | 2.40664120 05                                             |
| 700                                    | 710                                    | 8.36316120 23                                                                | 2.35700170 05                                             |
| 710                                    | 720                                    | 8.30412430 23                                                                | 2.30763090 05                                             |
| 720                                    | 730                                    | 8.24142490 23                                                                | 2.25861830 05                                             |
| 730                                    | 740                                    | 8.17540850 23                                                                | 2.21004260 05                                             |
| 740                                    | 750                                    | 8.10640060 23                                                                | 2.16197310 05                                             |
| 750                                    | 760                                    | 8.03470680 23                                                                | 2.11447010 05                                             |
| 760                                    | 770                                    | 7.96061380 23                                                                | 2.06758580 05                                             |
| 770                                    | 780                                    | 7.88439030 23                                                                | 2.02136510 05                                             |
| 780                                    | 790                                    | 7.80628740 23                                                                | 1.97584640 05                                             |
| 790                                    | 800                                    | 7.72653990 23                                                                | 1.93106170 05                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 7.64536700 23                                                                | 1.88703780 05                                             |
| 810                                    | 820                                    | 7.56297260 23                                                                | 1.84379650 05                                             |
| 820                                    | 830                                    | 7.47954680 23                                                                | 1.80135510 05                                             |
| 830                                    | 840                                    | 7.39526610 23                                                                | 1.75972680 05                                             |
| 840                                    | 850                                    | 7.31029430 23                                                                | 1.71892120 05                                             |
| 850                                    | 860                                    | 7.22478350 23                                                                | 1.67894490 05                                             |
| 860                                    | 870                                    | 7.13887430 23                                                                | 1.63980140 05                                             |
| 870                                    | 880                                    | 7.05269680 23                                                                | 1.60149170 05                                             |
| 880                                    | 890                                    | 6.96637110 23                                                                | 1.56401450 05                                             |
| 890                                    | 900                                    | 6.88000790 23                                                                | 1.52736650 05                                             |
| 900                                    | 910                                    | 6.79370910 23                                                                | 1.49154250 05                                             |
| 910                                    | 920                                    | 6.70756860 23                                                                | 1.45653590 05                                             |
| 920                                    | 930                                    | 6.62167210 23                                                                | 1.42233860 05                                             |
| 930                                    | 940                                    | 6.53609860 23                                                                | 1.38894140 05                                             |
| 940                                    | 950                                    | 6.45091980 23                                                                | 1.35633410 05                                             |
| 950                                    | 960                                    | 6.36620160 23                                                                | 1.32450550 05                                             |
| 960                                    | 970                                    | 6.28200370 23                                                                | 1.29344370 05                                             |
| 970                                    | 980                                    | 6.19838020 23                                                                | 1.26313610 05                                             |
| 980                                    | 990                                    | 6.11538040 23                                                                | 1.23356970 05                                             |
| 990                                    | 1000                                   | 6.03304840 23                                                                | 1.20473100 05                                             |
| 1000                                   | 1010                                   | 5.95142430 23                                                                | 1.17660610 05                                             |
| 1010                                   | 1020                                   | 5.87054360 23                                                                | 1.14918100 05                                             |
| 1020                                   | 1030                                   | 5.79043830 23                                                                | 1.12244130 05                                             |
| 1030                                   | 1040                                   | 5.71113660 23                                                                | 1.09637260 05                                             |
| 1040                                   | 1050                                   | 5.63266350 23                                                                | 1.07096030 05                                             |
| 1050                                   | 1060                                   | 5.55504080 23                                                                | 1.04619000 05                                             |
| 1060                                   | 1070                                   | 5.47828750 23                                                                | 1.02204710 05                                             |
| 1070                                   | 1080                                   | 5.40241990 23                                                                | 9.98517000 04                                             |
| 1080                                   | 1090                                   | 5.32745200 23                                                                | 9.75585420 04                                             |
| 1090                                   | 1100                                   | 5.25339530 23                                                                | 9.53238040 04                                             |
| 1100                                   | 1110                                   | 5.18025930 23                                                                | 9.31460710 04                                             |
| 1110                                   | 1120                                   | 5.10805170 23                                                                | 9.10239430 04                                             |
| 1120                                   | 1130                                   | 5.03677820 23                                                                | 8.89560410 04                                             |
| 1130                                   | 1140                                   | 4.96644300 23                                                                | 8.69410030 04                                             |
| 1140                                   | 1150                                   | 4.89704870 23                                                                | 8.49774900 04                                             |
| 1150                                   | 1160                                   | 4.82859650 23                                                                | 8.30641850 04                                             |
| 1160                                   | 1170                                   | 4.76108640 23                                                                | 8.11997950 04                                             |
| 1170                                   | 1180                                   | 4.69451720 23                                                                | 7.93830500 04                                             |
| 1180                                   | 1190                                   | 4.62888660 23                                                                | 7.76127050 04                                             |
| 1190                                   | 1200                                   | 4.56419130 23                                                                | 7.58875420 04                                             |
| 1200                                   | 1210                                   | 4.50042730 23                                                                | 7.42063680 04                                             |
| 1210                                   | 1220                                   | 4.43758940 23                                                                | 7.25680140 04                                             |
| 1220                                   | 1230                                   | 4.37567210 23                                                                | 7.09713390 04                                             |
| 1230                                   | 1240                                   | 4.31466890 23                                                                | 6.94152290 04                                             |
| 1240                                   | 1250                                   | 4.25457290 23                                                                | 6.78985950 04                                             |
| 1250                                   | 1260                                   | 4.19537660 23                                                                | 6.64203730 04                                             |
| 1260                                   | 1270                                   | 4.13707180 23                                                                | 6.49795280 04                                             |
| 1270                                   | 1280                                   | 4.07965020 23                                                                | 6.35750470 04                                             |
| 1280                                   | 1290                                   | 4.02310290 23                                                                | 6.22059450 04                                             |
| 1290                                   | 1300                                   | 3.96742080 23                                                                | 6.08712610 04                                             |
| 1300                                   | 1310                                   | 3.91259430 23                                                                | 5.95700600 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

T = 6000°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 1310                                   | 1320                                   | 3.8586136D 23                                           | 5.8301430D 04                               |
| 1320                                   | 1330                                   | 3.8054688D 23                                           | 5.7064484D 04                               |
| 1330                                   | 1340                                   | 3.7531497D 23                                           | 5.5858357D 04                               |
| 1340                                   | 1350                                   | 3.7016459D 23                                           | 5.4682210D 04                               |
| 1350                                   | 1360                                   | 3.6509469D 23                                           | 5.3535225D 04                               |
| 1360                                   | 1370                                   | 3.6010421D 23                                           | 5.2416605D 04                               |
| 1370                                   | 1380                                   | 3.5519208D 23                                           | 5.1325578D 04                               |
| 1380                                   | 1390                                   | 3.5035721D 23                                           | 5.0261392D 04                               |
| 1390                                   | 1400                                   | 3.4559853D 23                                           | 4.9223313D 04                               |
| 1400                                   | 1410                                   | 3.4091495D 23                                           | 4.8210632D 04                               |
| 1410                                   | 1420                                   | 3.3630538D 23                                           | 4.7222657D 04                               |
| 1420                                   | 1430                                   | 3.3176873D 23                                           | 4.6258716D 04                               |
| 1430                                   | 1440                                   | 3.2730392D 23                                           | 4.5318157D 04                               |
| 1440                                   | 1450                                   | 3.2290987D 23                                           | 4.4400344D 04                               |
| 1450                                   | 1460                                   | 3.1858548D 23                                           | 4.3504662D 04                               |
| 1460                                   | 1470                                   | 3.1432969D 23                                           | 4.2630511D 04                               |
| 1470                                   | 1480                                   | 3.1014143D 23                                           | 4.1777310D 04                               |
| 1480                                   | 1490                                   | 3.0601964D 23                                           | 4.0944494D 04                               |
| 1490                                   | 1500                                   | 3.0196327D 23                                           | 4.0131512D 04                               |
| 1500                                   | 1510                                   | 2.9797126D 23                                           | 3.9337832D 04                               |
| 1510                                   | 1520                                   | 2.9404258D 23                                           | 3.8562936D 04                               |
| 1520                                   | 1530                                   | 2.9017620D 23                                           | 3.7806319D 04                               |
| 1530                                   | 1540                                   | 2.8637112D 23                                           | 3.7067495D 04                               |
| 1540                                   | 1550                                   | 2.8262631D 23                                           | 3.6345986D 04                               |
| 1550                                   | 1560                                   | 2.7894079D 23                                           | 3.5641333D 04                               |
| 1560                                   | 1570                                   | 2.7531358D 23                                           | 3.4953088D 04                               |
| 1570                                   | 1580                                   | 2.7174370D 23                                           | 3.4280814D 04                               |
| 1580                                   | 1590                                   | 2.6823019D 23                                           | 3.3624091D 04                               |
| 1590                                   | 1600                                   | 2.6477210D 23                                           | 3.2982506D 04                               |
| 1600                                   | 1610                                   | 2.6136851D 23                                           | 3.2355663D 04                               |
| 1610                                   | 1620                                   | 2.5801848D 23                                           | 3.1743172D 04                               |
| 1620                                   | 1630                                   | 2.5472112D 23                                           | 3.1144658D 04                               |
| 1630                                   | 1640                                   | 2.5147551D 23                                           | 3.0559757D 04                               |
| 1640                                   | 1650                                   | 2.4828079D 23                                           | 2.9988111D 04                               |
| 1650                                   | 1660                                   | 2.4513607D 23                                           | 2.9429378D 04                               |
| 1660                                   | 1670                                   | 2.4204051D 23                                           | 2.8883222D 04                               |
| 1670                                   | 1680                                   | 2.3899325D 23                                           | 2.8349317D 04                               |
| 1680                                   | 1690                                   | 2.3599347D 23                                           | 2.7827340D 04                               |
| 1690                                   | 1700                                   | 2.3304035D 23                                           | 2.7317007D 04                               |
| 1700                                   | 1710                                   | 2.3013308D 23                                           | 2.6817996D 04                               |
| 1710                                   | 1720                                   | 2.2727087D 23                                           | 2.6330025D 04                               |
| 1720                                   | 1730                                   | 2.2445294D 23                                           | 2.5852812D 04                               |
| 1730                                   | 1740                                   | 2.2167852D 23                                           | 2.5386083D 04                               |
| 1740                                   | 1750                                   | 2.1894687D 23                                           | 2.4929572D 04                               |
| 1750                                   | 1760                                   | 2.1625724D 23                                           | 2.4483021D 04                               |
| 1760                                   | 1770                                   | 2.1360889D 23                                           | 2.4046178D 04                               |
| 1770                                   | 1780                                   | 2.1100113D 23                                           | 2.3618800D 04                               |
| 1780                                   | 1790                                   | 2.0843323D 23                                           | 2.3200647D 04                               |
| 1790                                   | 1800                                   | 2.0590451D 23                                           | 2.2791491D 04                               |
| 1800                                   | 1810                                   | 2.0341429D 23                                           | 2.2391106D 04                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 6000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 2.00961900 23                                                                | 2.19992750 04                                             |
| 1820                                   | 1830                                   | 1.98546690 23                                                                | 2.16157850 04                                             |
| 1830                                   | 1840                                   | 1.96168000 23                                                                | 2.12404300 04                                             |
| 1840                                   | 1850                                   | 1.93825220 23                                                                | 2.08730100 04                                             |
| 1850                                   | 1860                                   | 1.91517700 23                                                                | 2.05133290 04                                             |
| 1860                                   | 1870                                   | 1.89244850 23                                                                | 2.01611990 04                                             |
| 1870                                   | 1880                                   | 1.87006070 23                                                                | 1.98164340 04                                             |
| 1880                                   | 1890                                   | 1.84800760 23                                                                | 1.94788560 04                                             |
| 1890                                   | 1900                                   | 1.82628350 23                                                                | 1.91482900 04                                             |
| 1900                                   | 1910                                   | 1.80488260 23                                                                | 1.88245660 04                                             |
| 1910                                   | 1920                                   | 1.78379950 23                                                                | 1.85075200 04                                             |
| 1920                                   | 1930                                   | 1.76302860 23                                                                | 1.81969900 04                                             |
| 1930                                   | 1940                                   | 1.74256450 23                                                                | 1.78928200 04                                             |
| 1940                                   | 1950                                   | 1.72240210 23                                                                | 1.75948600 04                                             |
| 1950                                   | 1960                                   | 1.70253600 23                                                                | 1.73029600 04                                             |
| 1960                                   | 1970                                   | 1.68296130 23                                                                | 1.70169760 04                                             |
| 1970                                   | 1980                                   | 1.66367290 23                                                                | 1.67367690 04                                             |
| 1980                                   | 1990                                   | 1.64466590 23                                                                | 1.64622020 04                                             |
| 1990                                   | 2000                                   | 1.62593550 23                                                                | 1.61931430 04                                             |
| 2000                                   | 2010                                   | 1.60747700 23                                                                | 1.59294620 04                                             |

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Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 1.52867760 24                                                                | 1.48256710 05                                             |
| 2100                                   | 2200                                   | 1.36855430 24                                                                | 1.26547310 05                                             |
| 2200                                   | 2300                                   | 1.22941080 24                                                                | 1.08623430 05                                             |
| 2300                                   | 2400                                   | 1.10804160 24                                                                | 9.37301040 04                                             |
| 2400                                   | 2500                                   | 1.00178360 24                                                                | 8.12797480 04                                             |
| 2500                                   | 2600                                   | 9.08419610 23                                                                | 7.08119430 04                                             |
| 2600                                   | 2700                                   | 8.26038090 23                                                                | 6.19630630 04                                             |
| 2700                                   | 2800                                   | 7.53268310 23                                                                | 5.44442900 04                                             |
| 2800                                   | 2900                                   | 6.88626840 23                                                                | 4.80245980 04                                             |
| 2900                                   | 3000                                   | 6.31074320 23                                                                | 4.25180600 04                                             |
| 3000                                   | 3200                                   | 1.11333450 24                                                                | 7.14444310 04                                             |
| 3200                                   | 3400                                   | 9.47431040 23                                                                | 5.71056650 04                                             |
| 3400                                   | 3600                                   | 8.12643050 23                                                                | 4.61771660 04                                             |
| 3600                                   | 3800                                   | 7.02069680 23                                                                | 3.77338720 04                                             |
| 3800                                   | 4000                                   | 6.10550580 23                                                                | 3.11295860 04                                             |
| 4000                                   | 4200                                   | 5.34179880 23                                                                | 2.59052820 04                                             |
| 4200                                   | 4400                                   | 4.69967500 23                                                                | 2.17298390 04                                             |
| 4400                                   | 4600                                   | 4.15600060 23                                                                | 1.83609910 04                                             |
| 4600                                   | 4800                                   | 3.69269950 23                                                                | 1.56191680 04                                             |
| 4800                                   | 5000                                   | 3.29551640 23                                                                | 1.33696610 04                                             |
| 5000                                   | 5500                                   | 6.83865850 23                                                                | 2.59545010 04                                             |
| 5500                                   | 6000                                   | 5.31427780 23                                                                | 1.84068050 04                                             |
| 6000                                   | 6500                                   | 4.21051960 23                                                                | 1.34122950 04                                             |
| 6500                                   | 7000                                   | 3.39199550 23                                                                | 1.00017630 04                                             |
| 7000                                   | 7500                                   | 2.77233800 23                                                                | 7.60912430 03                                             |
| 7500                                   | 8000                                   | 2.29471200 23                                                                | 5.89077580 03                                             |
| 8000                                   | 8500                                   | 1.92068970 23                                                                | 4.63108400 03                                             |
| 8500                                   | 9000                                   | 1.62366170 23                                                                | 3.69072030 03                                             |
| 9000                                   | 9500                                   | 1.38480880 23                                                                | 2.97731380 03                                             |
| 9500                                   | 10000                                  | 1.19056820 23                                                                | 2.42820890 03                                             |
| 10000                                  | 11000                                  | 1.92970110 23                                                                | 3.66221310 03                                             |
| 11000                                  | 12000                                  | 1.48300460 23                                                                | 2.56849190 03                                             |
| 12000                                  | 13000                                  | 1.16418670 23                                                                | 1.85431890 03                                             |
| 13000                                  | 14000                                  | 9.30577150 22                                                                | 1.37202770 03                                             |
| 14000                                  | 15000                                  | 7.55511230 22                                                                | 1.03684740 03                                             |
| 15000                                  | 16000                                  | 6.21741670 22                                                                | 7.98062380 02                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 4.88496110 23                                                                | 3.18156650 05                                             |
| 310                                    | 320                                    | 5.40678360 23                                                                | 3.40974610 05                                             |
| 320                                    | 330                                    | 5.92419890 23                                                                | 3.62119340 05                                             |
| 330                                    | 340                                    | 6.43247720 23                                                                | 3.81460060 05                                             |
| 340                                    | 350                                    | 6.92748760 23                                                                | 3.98915620 05                                             |
| 350                                    | 360                                    | 7.40570690 23                                                                | 4.14448040 05                                             |
| 360                                    | 370                                    | 7.86420810 23                                                                | 4.28055990 05                                             |
| 370                                    | 380                                    | 8.30063210 23                                                                | 4.39768380 05                                             |
| 380                                    | 390                                    | 8.71314940 23                                                                | 4.49638440 05                                             |
| 390                                    | 400                                    | 9.10041430 23                                                                | 4.57738390 05                                             |
| 400                                    | 410                                    | 9.46151580 23                                                                | 4.64154600 05                                             |
| 410                                    | 420                                    | 9.79592700 23                                                                | 4.68983580 05                                             |
| 420                                    | 430                                    | 1.01034560 24                                                                | 4.72328360 05                                             |
| 430                                    | 440                                    | 1.03841970 24                                                                | 4.74295630 05                                             |
| 440                                    | 450                                    | 1.06384890 24                                                                | 4.74993330 05                                             |
| 450                                    | 460                                    | 1.08668680 24                                                                | 4.74528680 05                                             |
| 460                                    | 470                                    | 1.10700400 24                                                                | 4.73006710 05                                             |
| 470                                    | 480                                    | 1.12488350 24                                                                | 4.70529050 05                                             |
| 480                                    | 490                                    | 1.14041900 24                                                                | 4.67193110 05                                             |
| 490                                    | 500                                    | 1.15371130 24                                                                | 4.63091410 05                                             |
| 500                                    | 510                                    | 1.16486650 24                                                                | 4.58311240 05                                             |
| 510                                    | 520                                    | 1.17399430 24                                                                | 4.52934380 05                                             |
| 520                                    | 530                                    | 1.18120590 24                                                                | 4.47037040 05                                             |
| 530                                    | 540                                    | 1.18661280 24                                                                | 4.40689850 05                                             |
| 540                                    | 550                                    | 1.19032580 24                                                                | 4.33957970 05                                             |
| 550                                    | 560                                    | 1.19245400 24                                                                | 4.26901250 05                                             |
| 560                                    | 570                                    | 1.19310410 24                                                                | 4.19574420 05                                             |
| 570                                    | 580                                    | 1.19237940 24                                                                | 4.12027360 05                                             |
| 580                                    | 590                                    | 1.19038010 24                                                                | 4.04305340 05                                             |
| 590                                    | 600                                    | 1.18720230 24                                                                | 3.96449300 05                                             |
| 600                                    | 610                                    | 1.18293820 24                                                                | 3.88496160 05                                             |
| 610                                    | 620                                    | 1.17767550 24                                                                | 3.80479030 05                                             |
| 620                                    | 630                                    | 1.17149790 24                                                                | 3.72427540 05                                             |
| 630                                    | 640                                    | 1.16448460 24                                                                | 3.64368120 05                                             |
| 640                                    | 650                                    | 1.15671040 24                                                                | 3.56324200 05                                             |
| 650                                    | 660                                    | 1.14824590 24                                                                | 3.48316480 05                                             |
| 660                                    | 670                                    | 1.13915760 24                                                                | 3.40363200 05                                             |
| 670                                    | 680                                    | 1.12950790 24                                                                | 3.32480290 05                                             |
| 680                                    | 690                                    | 1.11935520 24                                                                | 3.24681630 05                                             |
| 690                                    | 700                                    | 1.10875420 24                                                                | 3.16979210 05                                             |
| 700                                    | 710                                    | 1.09775580 24                                                                | 3.09383320 05                                             |
| 710                                    | 720                                    | 1.08640770 24                                                                | 3.01902710 05                                             |
| 720                                    | 730                                    | 1.07475420 24                                                                | 2.94544730 05                                             |
| 730                                    | 740                                    | 1.06283620 24                                                                | 2.87315500 05                                             |
| 740                                    | 750                                    | 1.05069210 24                                                                | 2.80220000 05                                             |
| 750                                    | 760                                    | 1.03835700 24                                                                | 2.73262220 05                                             |
| 760                                    | 770                                    | 1.02586370 24                                                                | 2.66445240 05                                             |
| 770                                    | 780                                    | 1.01324230 24                                                                | 2.59771350 05                                             |
| 780                                    | 790                                    | 1.00052070 24                                                                | 2.53242110 05                                             |
| 790                                    | 800                                    | 9.87724420 23                                                                | 2.46858480 05                                             |

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 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 6500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 9.74877040 23                                                                | 2.40620840 05                                             |
| 810                                    | 820                                    | 9.62000180 23                                                                | 2.34529080 05                                             |
| 820                                    | 830                                    | 9.49113620 23                                                                | 2.28582660 05                                             |
| 830                                    | 840                                    | 9.36235460 23                                                                | 2.22780680 05                                             |
| 840                                    | 850                                    | 9.23382240 23                                                                | 2.17121880 05                                             |
| 850                                    | 860                                    | 9.10569010 23                                                                | 2.11604750 05                                             |
| 860                                    | 870                                    | 8.97809460 23                                                                | 2.06227510 05                                             |
| 870                                    | 880                                    | 8.85116010 23                                                                | 2.00988190 05                                             |
| 880                                    | 890                                    | 8.72499890 23                                                                | 1.95884640 05                                             |
| 890                                    | 900                                    | 8.59971240 23                                                                | 1.90914550 05                                             |
| 900                                    | 910                                    | 8.47539180 23                                                                | 1.86075510 05                                             |
| 910                                    | 920                                    | 8.35211880 23                                                                | 1.81364990 05                                             |
| 920                                    | 930                                    | 8.22996640 23                                                                | 1.76780390 05                                             |
| 930                                    | 940                                    | 8.10899960 23                                                                | 1.72319060 05                                             |
| 940                                    | 950                                    | 7.98927570 23                                                                | 1.67978280 05                                             |
| 950                                    | 960                                    | 7.87084540 23                                                                | 1.63755310 05                                             |
| 960                                    | 970                                    | 7.75375270 23                                                                | 1.59647420 05                                             |
| 970                                    | 980                                    | 7.63803600 23                                                                | 1.55651830 05                                             |
| 980                                    | 990                                    | 7.52372800 23                                                                | 1.51765790 05                                             |
| 990                                    | 1000                                   | 7.41085680 23                                                                | 1.47986550 05                                             |
| 1000                                   | 1010                                   | 7.29944560 23                                                                | 1.44311390 05                                             |
| 1010                                   | 1020                                   | 7.18951350 23                                                                | 1.40737600 05                                             |
| 1020                                   | 1030                                   | 7.08107570 23                                                                | 1.37262510 05                                             |
| 1030                                   | 1040                                   | 6.97414390 23                                                                | 1.33883490 05                                             |
| 1040                                   | 1050                                   | 6.86872650 23                                                                | 1.30597930 05                                             |
| 1050                                   | 1060                                   | 6.76482900 23                                                                | 1.27403280 05                                             |
| 1060                                   | 1070                                   | 6.66245420 23                                                                | 1.24297030 05                                             |
| 1070                                   | 1080                                   | 6.56160230 23                                                                | 1.21276730 05                                             |
| 1080                                   | 1090                                   | 6.46227150 23                                                                | 1.18339950 05                                             |
| 1090                                   | 1100                                   | 6.36445760 23                                                                | 1.15484340 05                                             |
| 1100                                   | 1110                                   | 6.26815500 23                                                                | 1.12707590 05                                             |
| 1110                                   | 1120                                   | 6.17335600 23                                                                | 1.10007440 05                                             |
| 1120                                   | 1130                                   | 6.08005170 23                                                                | 1.07381700 05                                             |
| 1130                                   | 1140                                   | 5.98823160 23                                                                | 1.04828200 05                                             |
| 1140                                   | 1150                                   | 5.89788410 23                                                                | 1.02344870 05                                             |
| 1150                                   | 1160                                   | 5.80899660 23                                                                | 9.99296490 04                                             |
| 1160                                   | 1170                                   | 5.72155520 23                                                                | 9.75805590 04                                             |
| 1170                                   | 1180                                   | 5.63554560 23                                                                | 9.52956640 04                                             |
| 1180                                   | 1190                                   | 5.55095220 23                                                                | 9.30730810 04                                             |
| 1190                                   | 1200                                   | 5.46775920 23                                                                | 9.09109800 04                                             |
| 1200                                   | 1210                                   | 5.38595000 23                                                                | 8.88075820 04                                             |
| 1210                                   | 1220                                   | 5.30550740 23                                                                | 8.67611570 04                                             |
| 1220                                   | 1230                                   | 5.22641400 23                                                                | 8.47700270 04                                             |
| 1230                                   | 1240                                   | 5.14865170 23                                                                | 8.28325590 04                                             |
| 1240                                   | 1250                                   | 5.07220250 23                                                                | 8.09471700 04                                             |
| 1250                                   | 1260                                   | 4.99704780 23                                                                | 7.91123230 04                                             |
| 1260                                   | 1270                                   | 4.92316900 23                                                                | 7.73265250 04                                             |
| 1270                                   | 1280                                   | 4.85054720 23                                                                | 7.55883300 04                                             |
| 1280                                   | 1290                                   | 4.77916350 23                                                                | 7.38963320 04                                             |
| 1290                                   | 1300                                   | 4.70899890 23                                                                | 7.22491710 04                                             |
| 1300                                   | 1310                                   | 4.64003440 23                                                                | 7.06455250 04                                             |

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 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

T = 6500°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 1310                                   | 1320                                   | 4.57225080 23                                           | 6.90841130 04                               |
| 1320                                   | 1330                                   | 4.50562920 23                                           | 6.75636950 04                               |
| 1330                                   | 1340                                   | 4.44015060 23                                           | 6.60830660 04                               |
| 1340                                   | 1350                                   | 4.37579600 23                                           | 6.46410590 04                               |
| 1350                                   | 1360                                   | 4.31254670 23                                           | 6.32365450 04                               |
| 1360                                   | 1370                                   | 4.25038410 23                                           | 6.18684260 04                               |
| 1370                                   | 1380                                   | 4.18928940 23                                           | 6.05356400 04                               |
| 1380                                   | 1390                                   | 4.12924440 23                                           | 5.92371590 04                               |
| 1390                                   | 1400                                   | 4.07023080 23                                           | 5.79719850 04                               |
| 1400                                   | 1410                                   | 4.01223050 23                                           | 5.67391510 04                               |
| 1410                                   | 1420                                   | 3.95522570 23                                           | 5.55377210 04                               |
| 1420                                   | 1430                                   | 3.89919880 23                                           | 5.43667870 04                               |
| 1430                                   | 1440                                   | 3.84413220 23                                           | 5.32254710 04                               |
| 1440                                   | 1450                                   | 3.79000880 23                                           | 5.21129190 04                               |
| 1450                                   | 1460                                   | 3.73681140 23                                           | 5.10283080 04                               |
| 1460                                   | 1470                                   | 3.68452340 23                                           | 4.99708360 04                               |
| 1470                                   | 1480                                   | 3.63312820 23                                           | 4.89397300 04                               |
| 1480                                   | 1490                                   | 3.58260950 23                                           | 4.79342380 04                               |
| 1490                                   | 1500                                   | 3.53295110 23                                           | 4.69536320 04                               |
| 1500                                   | 1510                                   | 3.48413740 23                                           | 4.59972070 04                               |
| 1510                                   | 1520                                   | 3.43615260 23                                           | 4.50642810 04                               |
| 1520                                   | 1530                                   | 3.38898140 23                                           | 4.41541910 04                               |
| 1530                                   | 1540                                   | 3.34260880 23                                           | 4.32662950 04                               |
| 1540                                   | 1550                                   | 3.29701990 23                                           | 4.23999720 04                               |
| 1550                                   | 1560                                   | 3.25220020 23                                           | 4.15546190 04                               |
| 1560                                   | 1570                                   | 3.20813510 23                                           | 4.07296520 04                               |
| 1570                                   | 1580                                   | 3.16481080 23                                           | 3.99245040 04                               |
| 1580                                   | 1590                                   | 3.12221330 23                                           | 3.91386270 04                               |
| 1590                                   | 1600                                   | 3.08032900 23                                           | 3.83714890 04                               |
| 1600                                   | 1610                                   | 3.03914450 23                                           | 3.76225740 04                               |
| 1610                                   | 1620                                   | 2.99864680 23                                           | 3.68913820 04                               |
| 1620                                   | 1630                                   | 2.95882280 23                                           | 3.61774280 04                               |
| 1630                                   | 1640                                   | 2.91966010 23                                           | 3.54802430 04                               |
| 1640                                   | 1650                                   | 2.88114600 23                                           | 3.47993700 04                               |
| 1650                                   | 1660                                   | 2.84326860 23                                           | 3.41343670 04                               |
| 1660                                   | 1670                                   | 2.80601580 23                                           | 3.34848060 04                               |
| 1670                                   | 1680                                   | 2.76937580 23                                           | 3.28502710 04                               |
| 1680                                   | 1690                                   | 2.73333720 23                                           | 3.22303590 04                               |
| 1690                                   | 1700                                   | 2.69788870 23                                           | 3.16246790 04                               |
| 1700                                   | 1710                                   | 2.66301920 23                                           | 3.10328500 04                               |
| 1710                                   | 1720                                   | 2.62871780 23                                           | 3.04545060 04                               |
| 1720                                   | 1730                                   | 2.59497390 23                                           | 2.98892890 04                               |
| 1730                                   | 1740                                   | 2.56177710 23                                           | 2.93368520 04                               |
| 1740                                   | 1750                                   | 2.52911710 23                                           | 2.87968580 04                               |
| 1750                                   | 1760                                   | 2.49698390 23                                           | 2.82689830 04                               |
| 1760                                   | 1770                                   | 2.46536760 23                                           | 2.77529080 04                               |
| 1770                                   | 1780                                   | 2.43425860 23                                           | 2.72483270 04                               |
| 1780                                   | 1790                                   | 2.40364740 23                                           | 2.67549410 04                               |
| 1790                                   | 1800                                   | 2.37352480 23                                           | 2.62724600 04                               |
| 1800                                   | 1810                                   | 2.34388170 23                                           | 2.58006040 04                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 2.31470920 23                                                                  | 2.53390980 04                                              |
| 1820                                           | 1830                                           | 2.28599850 23                                                                  | 2.48876780 04                                              |
| 1830                                           | 1840                                           | 2.25774110 23                                                                  | 2.44460870 04                                              |
| 1840                                           | 1850                                           | 2.22992860 23                                                                  | 2.40140740 04                                              |
| 1850                                           | 1860                                           | 2.20255280 23                                                                  | 2.35913960 04                                              |
| 1860                                           | 1870                                           | 2.17560570 23                                                                  | 2.31778170 04                                              |
| 1870                                           | 1880                                           | 2.14907930 23                                                                  | 2.27731090 04                                              |
| 1880                                           | 1890                                           | 2.12296600 23                                                                  | 2.23770490 04                                              |
| 1890                                           | 1900                                           | 2.09725810 23                                                                  | 2.19894190 04                                              |
| 1900                                           | 1910                                           | 2.07194830 23                                                                  | 2.16100110 04                                              |
| 1910                                           | 1920                                           | 2.04702920 23                                                                  | 2.12386200 04                                              |
| 1920                                           | 1930                                           | 2.02249380 23                                                                  | 2.08750470 04                                              |
| 1930                                           | 1940                                           | 1.99833500 23                                                                  | 2.05190990 04                                              |
| 1940                                           | 1950                                           | 1.97454600 23                                                                  | 2.01705900 04                                              |
| 1950                                           | 1960                                           | 1.95112010 23                                                                  | 1.98293350 04                                              |
| 1960                                           | 1970                                           | 1.92805080 23                                                                  | 1.94951600 04                                              |
| 1970                                           | 1980                                           | 1.90533150 23                                                                  | 1.91678900 04                                              |
| 1980                                           | 1990                                           | 1.88295600 23                                                                  | 1.88473590 04                                              |
| 1990                                           | 2000                                           | 1.86091810 23                                                                  | 1.85334030 04                                              |
| 2000                                           | 2010                                           | 1.83921180 23                                                                  | 1.82258640 04                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 1.74671870 24                                                                | 1.69405170 05                                             |
| 2100                                   | 2200                                   | 1.55932950 24                                                                | 1.44189390 05                                             |
| 2200                                   | 2300                                   | 1.39721630 24                                                                | 1.23450830 05                                             |
| 2300                                   | 2400                                   | 1.25637240 24                                                                | 1.06278350 05                                             |
| 2400                                   | 2500                                   | 1.13350350 24                                                                | 9.19675160 04                                             |
| 2500                                   | 2600                                   | 1.02589130 24                                                                | 7.99694200 04                                             |
| 2600                                   | 2700                                   | 9.31293380 23                                                                | 6.98530570 04                                             |
| 2700                                   | 2800                                   | 8.47806220 23                                                                | 6.12775350 04                                             |
| 2800                                   | 2900                                   | 7.73894530 23                                                                | 5.39713640 04                                             |
| 2900                                   | 3000                                   | 7.08235290 23                                                                | 4.77168900 04                                             |
| 3000                                   | 3200                                   | 1.24714340 24                                                                | 8.00322580 04                                             |
| 3200                                   | 3400                                   | 1.05892840 24                                                                | 6.38267560 04                                             |
| 3400                                   | 3600                                   | 9.05500140 23                                                                | 5.15108980 04                                             |
| 3600                                   | 3800                                   | 7.81802500 23                                                                | 4.20195490 04                                             |
| 3800                                   | 4000                                   | 6.78844880 23                                                                | 3.46118590 04                                             |
| 4000                                   | 4200                                   | 5.93114730 23                                                                | 2.87635050 04                                             |
| 4200                                   | 4400                                   | 5.21171980 23                                                                | 2.40974850 04                                             |
| 4400                                   | 4600                                   | 4.60364850 23                                                                | 2.03387560 04                                             |
| 4600                                   | 4800                                   | 4.08628030 23                                                                | 1.72839730 04                                             |
| 4800                                   | 5000                                   | 3.64337460 23                                                                | 1.47809400 04                                             |
| 5000                                   | 5500                                   | 7.54995870 23                                                                | 2.86545070 04                                             |
| 5500                                   | 6000                                   | 5.85673980 23                                                                | 2.02859370 04                                             |
| 6000                                   | 6500                                   | 4.63355780 23                                                                | 1.47599830 04                                             |
| 6500                                   | 7000                                   | 3.72820980 23                                                                | 1.09932130 04                                             |
| 7000                                   | 7500                                   | 3.04393150 23                                                                | 9.35460270 03                                             |
| 7500                                   | 8000                                   | 2.51722630 23                                                                | 6.46202350 03                                             |
| 8000                                   | 8500                                   | 2.10526450 23                                                                | 5.07614180 03                                             |
| 8500                                   | 9000                                   | 1.77844920 23                                                                | 4.04257820 03                                             |
| 9000                                   | 9500                                   | 1.51588540 23                                                                | 3.25913470 03                                             |
| 9500                                   | 10000                                  | 1.30253730 23                                                                | 2.65658000 03                                             |
| 10000                                  | 11000                                  | 2.10968970 23                                                                | 4.00382640 03                                             |
| 11000                                  | 12000                                  | 1.61999320 23                                                                | 2.40576450 03                                             |
| 12000                                  | 13000                                  | 1.27085130 23                                                                | 2.02422290 03                                             |
| 13000                                  | 14000                                  | 1.01524670 23                                                                | 1.49686810 03                                             |
| 14000                                  | 15000                                  | 8.23840580 22                                                                | 1.13062420 03                                             |
| 15000                                  | 16000                                  | 6.77679020 22                                                                | 8.69864980 02                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 7000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 8.2065952D 23                                                                | 5.3451877D 05                                             |
| 310                                    | 320                                    | 8.9360377D 23                                                                | 5.6356785D 05                                             |
| 320                                    | 330                                    | 9.6423614D 23                                                                | 5.8941614D 05                                             |
| 330                                    | 340                                    | 1.0320113D 24                                                                | 6.1202668D 05                                             |
| 340                                    | 350                                    | 1.0964895D 24                                                                | 6.3142759D 05                                             |
| 350                                    | 360                                    | 1.1573299D 24                                                                | 6.4769920D 05                                             |
| 360                                    | 370                                    | 1.2142819D 24                                                                | 6.6096233D 05                                             |
| 370                                    | 380                                    | 1.2671763D 24                                                                | 6.7136784D 05                                             |
| 380                                    | 390                                    | 1.3159148D 24                                                                | 6.7908775D 05                                             |
| 390                                    | 400                                    | 1.3604611D 24                                                                | 6.8430763D 05                                             |
| 400                                    | 410                                    | 1.4008307D 24                                                                | 6.8722038D 05                                             |
| 410                                    | 420                                    | 1.4370832D 24                                                                | 6.8802119D 05                                             |
| 420                                    | 430                                    | 1.4693134D 24                                                                | 6.8690354D 05                                             |
| 430                                    | 440                                    | 1.4976447D 24                                                                | 6.8405613D 05                                             |
| 440                                    | 450                                    | 1.5222228D 24                                                                | 6.7966058D 05                                             |
| 450                                    | 460                                    | 1.5432098D 24                                                                | 6.7388980D 05                                             |
| 460                                    | 470                                    | 1.5607796D 24                                                                | 6.6690688D 05                                             |
| 470                                    | 480                                    | 1.5751141D 24                                                                | 6.5886438D 05                                             |
| 480                                    | 490                                    | 1.5863991D 24                                                                | 6.4990406D 05                                             |
| 490                                    | 500                                    | 1.5948222D 24                                                                | 6.4015682D 05                                             |
| 500                                    | 510                                    | 1.6005699D 24                                                                | 6.2974279D 05                                             |
| 510                                    | 520                                    | 1.6038257D 24                                                                | 6.1877171D 05                                             |
| 520                                    | 530                                    | 1.6047693D 24                                                                | 6.0734332D 05                                             |
| 530                                    | 540                                    | 1.6035744D 24                                                                | 5.9554787D 05                                             |
| 540                                    | 550                                    | 1.6004087D 24                                                                | 5.8346666D 05                                             |
| 550                                    | 560                                    | 1.5954326D 24                                                                | 5.7117261D 05                                             |
| 560                                    | 570                                    | 1.5887993D 24                                                                | 5.5873089D 05                                             |
| 570                                    | 580                                    | 1.5806541D 24                                                                | 5.4619943D 05                                             |
| 580                                    | 590                                    | 1.5711347D 24                                                                | 5.3362956D 05                                             |
| 590                                    | 600                                    | 1.5603706D 24                                                                | 5.2106655D 05                                             |
| 600                                    | 610                                    | 1.5484838D 24                                                                | 5.0855010D 05                                             |
| 610                                    | 620                                    | 1.5355887D 24                                                                | 4.9611486D 05                                             |
| 620                                    | 630                                    | 1.5217920D 24                                                                | 4.8379092D 05                                             |
| 630                                    | 640                                    | 1.5071935D 24                                                                | 4.7160422D 05                                             |
| 640                                    | 650                                    | 1.4918860D 24                                                                | 4.5957697D 05                                             |
| 650                                    | 660                                    | 1.4759556D 24                                                                | 4.4772801D 05                                             |
| 660                                    | 670                                    | 1.4594823D 24                                                                | 4.3607318D 05                                             |
| 670                                    | 680                                    | 1.4425401D 24                                                                | 4.2462561D 05                                             |
| 680                                    | 690                                    | 1.4251971D 24                                                                | 4.1339605D 05                                             |
| 690                                    | 700                                    | 1.4075164D 24                                                                | 4.0239308D 05                                             |
| 700                                    | 710                                    | 1.3895559D 24                                                                | 3.9162339D 05                                             |
| 710                                    | 720                                    | 1.3713688D 24                                                                | 3.8109199D 05                                             |
| 720                                    | 730                                    | 1.3530041D 24                                                                | 3.7080241D 05                                             |
| 730                                    | 740                                    | 1.3345063D 24                                                                | 3.6075686D 05                                             |
| 740                                    | 750                                    | 1.3159164D 24                                                                | 3.5095642D 05                                             |
| 750                                    | 760                                    | 1.2972717D 24                                                                | 3.4140116D 05                                             |
| 760                                    | 770                                    | 1.2786061D 24                                                                | 3.3209029D 05                                             |
| 770                                    | 780                                    | 1.2599503D 24                                                                | 3.2302224D 05                                             |
| 780                                    | 790                                    | 1.2413325D 24                                                                | 3.1414482D 05                                             |
| 790                                    | 800                                    | 1.2227779D 24                                                                | 3.0560527D 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 7000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 800                                            | 810                                            | 1.20430930 24                                                                  | 2.97250360 05                                              |
| 810                                            | 820                                            | 1.18594740 24                                                                  | 2.89126470 05                                              |
| 820                                            | 830                                            | 1.16771040 24                                                                  | 2.81229640 05                                              |
| 830                                            | 840                                            | 1.14961490 24                                                                  | 2.73555630 05                                              |
| 840                                            | 850                                            | 1.13167570 24                                                                  | 2.66099990 05                                              |
| 850                                            | 860                                            | 1.11390570 24                                                                  | 2.58858080 05                                              |
| 860                                            | 870                                            | 1.09631640 24                                                                  | 2.51825150 05                                              |
| 870                                            | 880                                            | 1.07891810 24                                                                  | 2.44996320 05                                              |
| 880                                            | 890                                            | 1.06171960 24                                                                  | 2.38366660 05                                              |
| 890                                            | 900                                            | 1.04472840 24                                                                  | 2.31931190 05                                              |
| 900                                            | 910                                            | 1.02795120 24                                                                  | 2.25684930 05                                              |
| 910                                            | 920                                            | 1.01139350 24                                                                  | 2.19622880 05                                              |
| 920                                            | 930                                            | 9.95060150 23                                                                  | 2.13740080 05                                              |
| 930                                            | 940                                            | 9.78954890 23                                                                  | 2.08031590 05                                              |
| 940                                            | 950                                            | 9.63080840 23                                                                  | 2.02492530 05                                              |
| 950                                            | 960                                            | 9.47440430 23                                                                  | 1.97118090 05                                              |
| 960                                            | 970                                            | 9.32035450 23                                                                  | 1.91903510 05                                              |
| 970                                            | 980                                            | 9.16867110 23                                                                  | 1.86844120 05                                              |
| 980                                            | 990                                            | 9.01936130 23                                                                  | 1.81935340 05                                              |
| 990                                            | 1000                                           | 8.87242740 23                                                                  | 1.77172680 05                                              |
| 1000                                           | 1010                                           | 8.72786750 23                                                                  | 1.72551740 05                                              |
| 1010                                           | 1020                                           | 8.58567000 23                                                                  | 1.68068210 05                                              |
| 1020                                           | 1030                                           | 8.44584380 23                                                                  | 1.63717910 05                                              |
| 1030                                           | 1040                                           | 8.30835870 23                                                                  | 1.59496720 05                                              |
| 1040                                           | 1050                                           | 8.17320560 23                                                                  | 1.55400670 05                                              |
| 1050                                           | 1060                                           | 8.04036720 23                                                                  | 1.51425860 05                                              |
| 1060                                           | 1070                                           | 7.90982370 23                                                                  | 1.47568510 05                                              |
| 1070                                           | 1080                                           | 7.78155360 23                                                                  | 1.43824950 05                                              |
| 1080                                           | 1090                                           | 7.65553350 23                                                                  | 1.40191600 05                                              |
| 1090                                           | 1100                                           | 7.53173860 23                                                                  | 1.36664990 05                                              |
| 1100                                           | 1110                                           | 7.41014250 23                                                                  | 1.33241750 05                                              |
| 1110                                           | 1120                                           | 7.29071810 23                                                                  | 1.29918610 05                                              |
| 1120                                           | 1130                                           | 7.17343700 23                                                                  | 1.26692410 05                                              |
| 1130                                           | 1140                                           | 7.05826990 23                                                                  | 1.23560060 05                                              |
| 1140                                           | 1150                                           | 6.94518700 23                                                                  | 1.20518600 05                                              |
| 1150                                           | 1160                                           | 6.83415780 23                                                                  | 1.17565130 05                                              |
| 1160                                           | 1170                                           | 6.72515140 23                                                                  | 1.14696870 05                                              |
| 1170                                           | 1180                                           | 6.61813630 23                                                                  | 1.11911100 05                                              |
| 1180                                           | 1190                                           | 6.51308100 23                                                                  | 1.09205210 05                                              |
| 1190                                           | 1200                                           | 6.40995370 23                                                                  | 1.06576660 05                                              |
| 1200                                           | 1210                                           | 6.30872240 23                                                                  | 1.04023000 05                                              |
| 1210                                           | 1220                                           | 6.20935500 23                                                                  | 1.01541870 05                                              |
| 1220                                           | 1230                                           | 6.11181970 23                                                                  | 9.91309530 04                                              |
| 1230                                           | 1240                                           | 6.01608430 23                                                                  | 9.67880430 04                                              |
| 1240                                           | 1250                                           | 5.92211720 23                                                                  | 9.45109900 04                                              |
| 1250                                           | 1260                                           | 5.82988670 23                                                                  | 9.22977180 04                                              |
| 1260                                           | 1270                                           | 5.73936130 23                                                                  | 9.01462210 04                                              |
| 1270                                           | 1280                                           | 5.65050960 23                                                                  | 8.80545580 04                                              |
| 1280                                           | 1290                                           | 5.56330090 23                                                                  | 8.60208530 04                                              |
| 1290                                           | 1300                                           | 5.47770440 23                                                                  | 8.40432940 04                                              |
| 1300                                           | 1310                                           | 5.39368970 23                                                                  | 8.21201260 04                                              |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

T = 7000°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>$W m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 1310                                   | 1320                                   | 5.31122690 23                                           | 8.02496570 04                               |
| 1320                                   | 1330                                   | 5.23028620 23                                           | 7.84302470 04                               |
| 1330                                   | 1340                                   | 5.15083850 23                                           | 7.66603150 04                               |
| 1340                                   | 1350                                   | 5.07285490 23                                           | 7.49383300 04                               |
| 1350                                   | 1360                                   | 4.99630680 23                                           | 7.32628130 04                               |
| 1360                                   | 1370                                   | 4.92116630 23                                           | 7.16323340 04                               |
| 1370                                   | 1380                                   | 4.84740580 23                                           | 7.00455120 04                               |
| 1380                                   | 1390                                   | 4.77499790 23                                           | 6.85010110 04                               |
| 1390                                   | 1400                                   | 4.70391610 23                                           | 6.69975400 04                               |
| 1400                                   | 1410                                   | 4.63413390 23                                           | 6.55338500 04                               |
| 1410                                   | 1420                                   | 4.56562550 23                                           | 6.41087360 04                               |
| 1420                                   | 1430                                   | 4.49836550 23                                           | 6.27210300 04                               |
| 1430                                   | 1440                                   | 4.43232900 23                                           | 6.13696050 04                               |
| 1440                                   | 1450                                   | 4.36749140 23                                           | 6.00533700 04                               |
| 1450                                   | 1460                                   | 4.30382860 23                                           | 5.87712710 04                               |
| 1460                                   | 1470                                   | 4.24131700 23                                           | 5.75222900 04                               |
| 1470                                   | 1480                                   | 4.17993350 23                                           | 5.63054390 04                               |
| 1480                                   | 1490                                   | 4.11965530 23                                           | 5.51197660 04                               |
| 1490                                   | 1500                                   | 4.06046010 23                                           | 5.39643480 04                               |
| 1500                                   | 1510                                   | 4.00232610 23                                           | 5.28382940 04                               |
| 1510                                   | 1520                                   | 3.94523170 23                                           | 5.17407410 04                               |
| 1520                                   | 1530                                   | 3.88915610 23                                           | 5.06708550 04                               |
| 1530                                   | 1540                                   | 3.83407850 23                                           | 4.96278280 04                               |
| 1540                                   | 1550                                   | 3.77997880 23                                           | 4.86108800 04                               |
| 1550                                   | 1560                                   | 3.72683730 23                                           | 4.76192540 04                               |
| 1560                                   | 1570                                   | 3.67463460 23                                           | 4.66522200 04                               |
| 1570                                   | 1580                                   | 3.62335170 23                                           | 4.57090690 04                               |
| 1580                                   | 1590                                   | 3.57297010 23                                           | 4.47891170 04                               |
| 1590                                   | 1600                                   | 3.52347150 23                                           | 4.38917020 04                               |
| 1600                                   | 1610                                   | 3.47483820 23                                           | 4.30161800 04                               |
| 1610                                   | 1620                                   | 3.42705270 23                                           | 4.21619310 04                               |
| 1620                                   | 1630                                   | 3.38009790 23                                           | 4.13281540 04                               |
| 1630                                   | 1640                                   | 3.33395710 23                                           | 4.05148660 04                               |
| 1640                                   | 1650                                   | 3.28861410 23                                           | 3.97209030 04                               |
| 1650                                   | 1660                                   | 3.24405270 23                                           | 3.89459190 04                               |
| 1660                                   | 1670                                   | 3.20025730 23                                           | 3.81893850 04                               |
| 1670                                   | 1680                                   | 3.15721260 23                                           | 3.74507900 04                               |
| 1680                                   | 1690                                   | 3.11490350 23                                           | 3.67296350 04                               |
| 1690                                   | 1700                                   | 3.07331540 23                                           | 3.60254420 04                               |
| 1700                                   | 1710                                   | 3.03243400 23                                           | 3.53377430 04                               |
| 1710                                   | 1720                                   | 2.99224510 23                                           | 3.46660880 04                               |
| 1720                                   | 1730                                   | 2.95273500 23                                           | 3.40100390 04                               |
| 1730                                   | 1740                                   | 2.91389020 23                                           | 3.33691710 04                               |
| 1740                                   | 1750                                   | 2.87569760 23                                           | 3.27430750 04                               |
| 1750                                   | 1760                                   | 2.83914430 23                                           | 3.21313510 04                               |
| 1760                                   | 1770                                   | 2.80121770 23                                           | 3.15336140 04                               |
| 1770                                   | 1780                                   | 2.76490540 23                                           | 3.09494890 04                               |
| 1780                                   | 1790                                   | 2.72919540 23                                           | 3.03786120 04                               |
| 1790                                   | 1800                                   | 2.69407580 23                                           | 2.98206320 04                               |
| 1800                                   | 1810                                   | 2.65953520 23                                           | 2.92752070 04                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 7000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 2.62556210 23                                                                  | 2.87420070 04                                              |
| 1820                                           | 1830                                           | 2.59214570 23                                                                  | 2.82207090 04                                              |
| 1830                                           | 1840                                           | 2.55927500 23                                                                  | 2.77110020 04                                              |
| 1840                                           | 1850                                           | 2.52693940 23                                                                  | 2.72125830 04                                              |
| 1850                                           | 1860                                           | 2.49512860 23                                                                  | 2.67251590 04                                              |
| 1860                                           | 1870                                           | 2.46383250 23                                                                  | 2.62484450 04                                              |
| 1870                                           | 1880                                           | 2.43304110 23                                                                  | 2.57821650 04                                              |
| 1880                                           | 1890                                           | 2.40274480 23                                                                  | 2.53260510 04                                              |
| 1890                                           | 1900                                           | 2.37293400 23                                                                  | 2.48798410 04                                              |
| 1900                                           | 1910                                           | 2.34359960 23                                                                  | 2.44432830 04                                              |
| 1910                                           | 1920                                           | 2.31473220 23                                                                  | 2.40161320 04                                              |
| 1920                                           | 1930                                           | 2.28632320 23                                                                  | 2.35981490 04                                              |
| 1930                                           | 1940                                           | 2.25836380 23                                                                  | 2.31891030 04                                              |
| 1940                                           | 1950                                           | 2.23084540 23                                                                  | 2.27887690 04                                              |
| 1950                                           | 1960                                           | 2.20375980 23                                                                  | 2.23969280 04                                              |
| 1960                                           | 1970                                           | 2.17709870 23                                                                  | 2.20133680 04                                              |
| 1970                                           | 1980                                           | 2.15085430 23                                                                  | 2.16378840 04                                              |
| 1980                                           | 1990                                           | 2.12501860 23                                                                  | 2.12702750 04                                              |
| 1990                                           | 2000                                           | 2.09958410 23                                                                  | 2.09103460 04                                              |
| 2000                                           | 2010                                           | 2.07454320 23                                                                  | 2.05579080 04                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 7000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 1.96800410 24                                                                | 1.90868450 05                                             |
| 2100                                   | 2200                                   | 1.75268780 24                                                                | 1.62070430 05                                             |
| 2200                                   | 2300                                   | 1.56709810 24                                                                | 1.38461770 05                                             |
| 2300                                   | 2400                                   | 1.40638690 24                                                                | 1.18969070 05                                             |
| 2400                                   | 2500                                   | 1.26659990 24                                                                | 1.02766960 05                                             |
| 2500                                   | 2600                                   | 1.14449670 24                                                                | 8.92153080 04                                             |
| 2600                                   | 2700                                   | 1.03740920 24                                                                | 7.78136170 04                                             |
| 2700                                   | 2800                                   | 9.43129460 23                                                                | 6.81675560 04                                             |
| 2800                                   | 2900                                   | 8.59821980 23                                                                | 5.99641530 04                                             |
| 2900                                   | 3000                                   | 7.85953690 23                                                                | 5.29532850 04                                             |
| 3000                                   | 3200                                   | 1.38183020 24                                                                | 8.86764000 04                                             |
| 3200                                   | 3400                                   | 1.17107150 24                                                                | 7.05867890 04                                             |
| 3400                                   | 3600                                   | 1.00084050 24                                                                | 5.68721080 04                                             |
| 3600                                   | 3800                                   | 8.61902750 23                                                                | 4.63249860 04                                             |
| 3800                                   | 4000                                   | 7.47422480 23                                                                | 3.81085850 04                                             |
| 4000                                   | 4200                                   | 6.52270820 23                                                                | 3.16324630 04                                             |
| 4200                                   | 4400                                   | 5.72551240 23                                                                | 2.64732150 04                                             |
| 4400                                   | 4600                                   | 5.05269180 23                                                                | 2.23226880 04                                             |
| 4600                                   | 4800                                   | 4.48098580 23                                                                | 1.89535370 04                                             |
| 4800                                   | 5000                                   | 3.99214740 23                                                                | 1.61959310 04                                             |
| 5000                                   | 5500                                   | 8.26289750 23                                                                | 3.13607440 04                                             |
| 5500                                   | 6000                                   | 6.40024280 23                                                                | 2.21686790 04                                             |
| 6000                                   | 6500                                   | 5.05728280 23                                                                | 1.61098600 04                                             |
| 6500                                   | 7000                                   | 4.06489180 23                                                                | 1.19860440 04                                             |
| 7000                                   | 7500                                   | 3.31585230 23                                                                | 9.10098030 03                                             |
| 7500                                   | 8000                                   | 2.73997520 23                                                                | 7.03387400 03                                             |
| 8000                                   | 8500                                   | 2.29001100 23                                                                | 5.52161380 03                                             |
| 8500                                   | 9000                                   | 1.93336480 23                                                                | 4.39472710 03                                             |
| 9000                                   | 9500                                   | 1.64705890 23                                                                | 3.54116420 03                                             |
| 9500                                   | 10000                                  | 1.41458100 23                                                                | 2.88510330 03                                             |
| 10000                                  | 11000                                  | 2.28978210 23                                                                | 4.34563710 03                                             |
| 11000                                  | 12000                                  | 1.75704750 23                                                                | 3.04315130 03                                             |
| 12000                                  | 13000                                  | 1.37755930 23                                                                | 2.19419610 03                                             |
| 13000                                  | 14000                                  | 1.09994580 23                                                                | 1.62175200 03                                             |
| 14000                                  | 15000                                  | 8.92190530 22                                                                | 1.22442920 03                                             |
| 15000                                  | 16000                                  | 7.33631120 22                                                                | 9.41686530 02                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 7500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 300                                            | 310                                            | 1.28690000 24                                                                  | 8.38227840 05                                              |
| 310                                            | 320                                            | 1.38163700 24                                                                  | 8.71386630 05                                              |
| 320                                            | 330                                            | 1.47124670 24                                                                  | 8.99369980 05                                              |
| 330                                            | 340                                            | 1.55521930 24                                                                  | 9.22378960 05                                              |
| 340                                            | 350                                            | 1.63319750 24                                                                  | 9.40523530 05                                              |
| 350                                            | 360                                            | 1.70495770 24                                                                  | 9.54202840 05                                              |
| 360                                            | 370                                            | 1.77039240 24                                                                  | 9.63688580 05                                              |
| 370                                            | 380                                            | 1.82949210 24                                                                  | 9.69311250 05                                              |
| 380                                            | 390                                            | 1.88232920 24                                                                  | 9.71409100 05                                              |
| 390                                            | 400                                            | 1.92904180 24                                                                  | 9.70319450 05                                              |
| 400                                            | 410                                            | 1.96982090 24                                                                  | 9.66372040 05                                              |
| 410                                            | 420                                            | 2.00489770 24                                                                  | 9.59884170 05                                              |
| 420                                            | 430                                            | 2.03453310 24                                                                  | 9.51157230 05                                              |
| 430                                            | 440                                            | 2.05900890 24                                                                  | 9.40474380 05                                              |
| 440                                            | 450                                            | 2.07862030 24                                                                  | 9.28099270 05                                              |
| 450                                            | 460                                            | 2.09366920 24                                                                  | 9.14275360 05                                              |
| 460                                            | 470                                            | 2.10445930 24                                                                  | 8.99225930 05                                              |
| 470                                            | 480                                            | 2.11129170 24                                                                  | 8.83154430 05                                              |
| 480                                            | 490                                            | 2.11446210 24                                                                  | 8.66245130 05                                              |
| 490                                            | 500                                            | 2.11425750 24                                                                  | 8.48664110 05                                              |
| 500                                            | 510                                            | 2.11095480 24                                                                  | 8.30560210 05                                              |
| 510                                            | 520                                            | 2.10481910 24                                                                  | 8.12066220 05                                              |
| 520                                            | 530                                            | 2.09610300 24                                                                  | 7.93300010 05                                              |
| 530                                            | 540                                            | 2.08504560 24                                                                  | 7.74365720 05                                              |
| 540                                            | 550                                            | 2.07187270 24                                                                  | 7.55354890 05                                              |
| 550                                            | 560                                            | 2.05679630 24                                                                  | 7.36347580 05                                              |
| 560                                            | 570                                            | 2.04001490 24                                                                  | 7.17413430 05                                              |
| 570                                            | 580                                            | 2.02171380 24                                                                  | 6.98612640 05                                              |
| 580                                            | 590                                            | 2.00206530 24                                                                  | 6.79996950 05                                              |
| 590                                            | 600                                            | 1.98122940 24                                                                  | 6.61610440 05                                              |
| 600                                            | 610                                            | 1.95935430 24                                                                  | 6.43490400 05                                              |
| 610                                            | 620                                            | 1.93657670 24                                                                  | 6.25668020 05                                              |
| 620                                            | 630                                            | 1.91302260 24                                                                  | 6.08169070 05                                              |
| 630                                            | 640                                            | 1.88880780 24                                                                  | 5.91014540 05                                              |
| 640                                            | 650                                            | 1.86403870 24                                                                  | 5.74221160 05                                              |
| 650                                            | 660                                            | 1.83881260 24                                                                  | 5.57801920 05                                              |
| 660                                            | 670                                            | 1.81321860 24                                                                  | 5.41766550 05                                              |
| 670                                            | 680                                            | 1.78733770 24                                                                  | 5.26121860 05                                              |
| 680                                            | 690                                            | 1.76124390 24                                                                  | 5.10872180 05                                              |
| 690                                            | 700                                            | 1.73500420 24                                                                  | 4.96019640 05                                              |
| 700                                            | 710                                            | 1.70867960 24                                                                  | 4.81564500 05                                              |
| 710                                            | 720                                            | 1.68232490 24                                                                  | 4.67505380 05                                              |
| 720                                            | 730                                            | 1.65599000 24                                                                  | 4.53839490 05                                              |
| 730                                            | 740                                            | 1.62971940 24                                                                  | 4.40562870 05                                              |
| 740                                            | 750                                            | 1.60355340 24                                                                  | 4.27670550 05                                              |
| 750                                            | 760                                            | 1.57752780 24                                                                  | 4.15156710 05                                              |
| 760                                            | 770                                            | 1.55167470 24                                                                  | 4.03014840 05                                              |
| 770                                            | 780                                            | 1.52602260 24                                                                  | 3.91237860 05                                              |
| 780                                            | 790                                            | 1.50059680 24                                                                  | 3.79818200 05                                              |
| 790                                            | 800                                            | 1.47541960 24                                                                  | 3.68747950 05                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 7500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 1.45051030 24                                                                | 3.58018910 05                                             |
| 810                                    | 820                                    | 1.42588630 24                                                                | 3.47622680 05                                             |
| 820                                    | 830                                    | 1.40156210 24                                                                | 3.37550710 05                                             |
| 830                                    | 840                                    | 1.37755040 24                                                                | 3.27794360 05                                             |
| 840                                    | 850                                    | 1.35386210 24                                                                | 3.18344970 05                                             |
| 850                                    | 860                                    | 1.33050620 24                                                                | 3.09193870 05                                             |
| 860                                    | 870                                    | 1.30749020 24                                                                | 3.00332450 05                                             |
| 870                                    | 880                                    | 1.28482030 24                                                                | 2.91752140 05                                             |
| 880                                    | 890                                    | 1.26250100 24                                                                | 2.83444490 05                                             |
| 890                                    | 900                                    | 1.24053620 24                                                                | 2.75401180 05                                             |
| 900                                    | 910                                    | 1.21892840 24                                                                | 2.67613990 05                                             |
| 910                                    | 920                                    | 1.19767910 24                                                                | 2.60074880 05                                             |
| 920                                    | 930                                    | 1.17678910 24                                                                | 2.52775970 05                                             |
| 930                                    | 940                                    | 1.15625850 24                                                                | 2.45709550 05                                             |
| 940                                    | 950                                    | 1.13608650 24                                                                | 2.38858090 05                                             |
| 950                                    | 960                                    | 1.11627170 24                                                                | 2.32244240 05                                             |
| 960                                    | 970                                    | 1.09681240 24                                                                | 2.25830860 05                                             |
| 970                                    | 980                                    | 1.07770620 24                                                                | 2.19620980 05                                             |
| 980                                    | 990                                    | 1.05895010 24                                                                | 2.13607850 05                                             |
| 990                                    | 1000                                   | 1.04054120 24                                                                | 2.07784900 05                                             |
| 1000                                   | 1010                                   | 1.02247580 24                                                                | 2.02145750 05                                             |
| 1010                                   | 1020                                   | 1.00475010 24                                                                | 1.96684210 05                                             |
| 1020                                   | 1030                                   | 9.87360020 23                                                                | 1.91394310 05                                             |
| 1030                                   | 1040                                   | 9.70301300 23                                                                | 1.86270250 05                                             |
| 1040                                   | 1050                                   | 9.53569440 23                                                                | 1.81306390 05                                             |
| 1050                                   | 1060                                   | 9.37159760 23                                                                | 1.76497330 05                                             |
| 1060                                   | 1070                                   | 9.21067500 23                                                                | 1.71837790 05                                             |
| 1070                                   | 1080                                   | 9.05287730 23                                                                | 1.67322700 05                                             |
| 1080                                   | 1090                                   | 8.89815470 23                                                                | 1.62947160 05                                             |
| 1090                                   | 1100                                   | 8.74645660 23                                                                | 1.58706410 05                                             |
| 1100                                   | 1110                                   | 8.59773180 23                                                                | 1.54595890 05                                             |
| 1110                                   | 1120                                   | 8.45192870 23                                                                | 1.50611170 05                                             |
| 1120                                   | 1130                                   | 8.30899560 23                                                                | 1.46747970 05                                             |
| 1130                                   | 1140                                   | 8.16888060 23                                                                | 1.43002180 05                                             |
| 1140                                   | 1150                                   | 8.03153190 23                                                                | 1.39369830 05                                             |
| 1150                                   | 1160                                   | 7.89689760 23                                                                | 1.35847070 05                                             |
| 1160                                   | 1170                                   | 7.76492630 23                                                                | 1.32430210 05                                             |
| 1170                                   | 1180                                   | 7.63556670 23                                                                | 1.29115670 05                                             |
| 1180                                   | 1190                                   | 7.50876790 23                                                                | 1.25900010 05                                             |
| 1190                                   | 1200                                   | 7.38447960 23                                                                | 1.22779910 05                                             |
| 1200                                   | 1210                                   | 7.26265160 23                                                                | 1.19752170 05                                             |
| 1210                                   | 1220                                   | 7.14323460 23                                                                | 1.16813700 05                                             |
| 1220                                   | 1230                                   | 7.02617990 23                                                                | 1.13961520 05                                             |
| 1230                                   | 1240                                   | 6.91113900 23                                                                | 1.11192750 05                                             |
| 1240                                   | 1250                                   | 6.79590050 23                                                                | 1.08504630 05                                             |
| 1250                                   | 1260                                   | 6.68870950 23                                                                | 1.05894490 05                                             |
| 1260                                   | 1270                                   | 6.58062780 23                                                                | 1.03359760 05                                             |
| 1270                                   | 1280                                   | 6.47467390 23                                                                | 1.00897940 05                                             |
| 1280                                   | 1290                                   | 6.37080320 23                                                                | 9.85066510 04                                             |
| 1290                                   | 1300                                   | 6.26897150 23                                                                | 9.61835800 04                                             |
| 1300                                   | 1310                                   | 6.16913590 23                                                                | 9.39265020 04                                             |

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| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 6.07125370 23                                                                  | 9.17332690 04                                              |
| 1320                                           | 1330                                           | 5.97528330 23                                                                  | 8.96018110 04                                              |
| 1330                                           | 1340                                           | 5.88118400 23                                                                  | 8.75301320 04                                              |
| 1340                                           | 1350                                           | 5.78891550 23                                                                  | 8.55163050 04                                              |
| 1350                                           | 1360                                           | 5.69843850 23                                                                  | 8.35584730 04                                              |
| 1360                                           | 1370                                           | 5.60971450 23                                                                  | 8.16548450 04                                              |
| 1370                                           | 1380                                           | 5.52270570 23                                                                  | 7.98036920 04                                              |
| 1380                                           | 1390                                           | 5.43737510 23                                                                  | 7.80033450 04                                              |
| 1390                                           | 1400                                           | 5.35368650 23                                                                  | 7.62521970 04                                              |
| 1400                                           | 1410                                           | 5.27160440 23                                                                  | 7.45486960 04                                              |
| 1410                                           | 1420                                           | 5.19109400 23                                                                  | 7.28913410 04                                              |
| 1420                                           | 1430                                           | 5.11212120 23                                                                  | 7.12786890 04                                              |
| 1430                                           | 1440                                           | 5.03465290 23                                                                  | 6.97093440 04                                              |
| 1440                                           | 1450                                           | 4.95865650 23                                                                  | 6.81819580 04                                              |
| 1450                                           | 1460                                           | 4.88410010 23                                                                  | 6.66952320 04                                              |
| 1460                                           | 1470                                           | 4.81095250 23                                                                  | 6.52479110 04                                              |
| 1470                                           | 1480                                           | 4.73918340 23                                                                  | 6.38387820 04                                              |
| 1480                                           | 1490                                           | 4.66876280 23                                                                  | 6.24666760 04                                              |
| 1490                                           | 1500                                           | 4.59966170 23                                                                  | 6.11304620 04                                              |
| 1500                                           | 1510                                           | 4.53185160 23                                                                  | 5.98290490 04                                              |
| 1510                                           | 1520                                           | 4.46530470 23                                                                  | 5.85613830 04                                              |
| 1520                                           | 1530                                           | 4.39999370 23                                                                  | 5.73264450 04                                              |
| 1530                                           | 1540                                           | 4.33589200 23                                                                  | 5.61232510 04                                              |
| 1540                                           | 1550                                           | 4.27297370 23                                                                  | 5.49508520 04                                              |
| 1550                                           | 1560                                           | 4.21121340 23                                                                  | 5.38083280 04                                              |
| 1560                                           | 1570                                           | 4.15058630 23                                                                  | 5.26947910 04                                              |
| 1570                                           | 1580                                           | 4.09106810 23                                                                  | 5.16093840 04                                              |
| 1580                                           | 1590                                           | 4.03263510 23                                                                  | 5.05512790 04                                              |
| 1590                                           | 1600                                           | 3.97526420 23                                                                  | 4.95196690 04                                              |
| 1600                                           | 1610                                           | 3.91893280 23                                                                  | 4.85137840 04                                              |
| 1610                                           | 1620                                           | 3.86361870 23                                                                  | 4.75328720 04                                              |
| 1620                                           | 1630                                           | 3.80930050 23                                                                  | 4.65762090 04                                              |
| 1630                                           | 1640                                           | 3.75595690 23                                                                  | 4.56430940 04                                              |
| 1640                                           | 1650                                           | 3.70356750 23                                                                  | 4.47328470 04                                              |
| 1650                                           | 1660                                           | 3.65211210 23                                                                  | 4.38448140 04                                              |
| 1660                                           | 1670                                           | 3.60157110 23                                                                  | 4.29783600 04                                              |
| 1670                                           | 1680                                           | 3.55192520 23                                                                  | 4.21328690 04                                              |
| 1680                                           | 1690                                           | 3.50315570 23                                                                  | 4.13077490 04                                              |
| 1690                                           | 1700                                           | 3.45524430 23                                                                  | 4.05024230 04                                              |
| 1700                                           | 1710                                           | 3.40817310 23                                                                  | 3.97163350 04                                              |
| 1710                                           | 1720                                           | 3.36192460 23                                                                  | 3.89489460 04                                              |
| 1720                                           | 1730                                           | 3.31648170 23                                                                  | 3.81997330 04                                              |
| 1730                                           | 1740                                           | 3.27182780 23                                                                  | 3.74681920 04                                              |
| 1740                                           | 1750                                           | 3.22794650 23                                                                  | 3.67538330 04                                              |
| 1750                                           | 1760                                           | 3.18482200 23                                                                  | 3.60561820 04                                              |
| 1760                                           | 1770                                           | 3.14243860 23                                                                  | 3.53747810 04                                              |
| 1770                                           | 1780                                           | 3.10078130 23                                                                  | 3.47091830 04                                              |
| 1780                                           | 1790                                           | 3.05983500 23                                                                  | 3.40589590 04                                              |
| 1790                                           | 1800                                           | 3.01958540 23                                                                  | 3.34236920 04                                              |
| 1800                                           | 1810                                           | 2.98001830 23                                                                  | 3.28029750 04                                              |

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 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 7500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 2.94111980 23                                                                  | 3.21964180 04                                              |
| 1820                                           | 1830                                           | 2.90287640 23                                                                  | 3.16036400 04                                              |
| 1830                                           | 1840                                           | 2.86527480 23                                                                  | 3.10242730 04                                              |
| 1840                                           | 1850                                           | 2.82830220 23                                                                  | 3.04579600 04                                              |
| 1850                                           | 1860                                           | 2.79194600 23                                                                  | 2.99043540 04                                              |
| 1860                                           | 1870                                           | 2.75619370 23                                                                  | 2.93631200 04                                              |
| 1870                                           | 1880                                           | 2.72103340 23                                                                  | 2.88339310 04                                              |
| 1880                                           | 1890                                           | 2.68645320 23                                                                  | 2.83164730 04                                              |
| 1890                                           | 1900                                           | 2.65244170 23                                                                  | 2.78104380 04                                              |
| 1900                                           | 1910                                           | 2.61898760 23                                                                  | 2.73155290 04                                              |
| 1910                                           | 1920                                           | 2.58607980 23                                                                  | 2.68314580 04                                              |
| 1920                                           | 1930                                           | 2.55370770 23                                                                  | 2.63579450 04                                              |
| 1930                                           | 1940                                           | 2.52186070 23                                                                  | 2.58947180 04                                              |
| 1940                                           | 1950                                           | 2.49052860 23                                                                  | 2.54415140 04                                              |
| 1950                                           | 1960                                           | 2.45970120 23                                                                  | 2.49980770 04                                              |
| 1960                                           | 1970                                           | 2.42936890 23                                                                  | 2.45641580 04                                              |
| 1970                                           | 1980                                           | 2.39952190 23                                                                  | 2.41395170 04                                              |
| 1980                                           | 1990                                           | 2.37015100 23                                                                  | 2.37239180 04                                              |
| 1990                                           | 2000                                           | 2.34124680 23                                                                  | 2.33171350 04                                              |
| 2000                                           | 2010                                           | 2.31280050 23                                                                  | 2.29189470 04                                              |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 7500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 2.19192690 24                                                                  | 2.12587630 05                                              |
| 2100                                           | 2200                                           | 1.94814310 24                                                                  | 1.80145460 05                                              |
| 2200                                           | 2300                                           | 1.73366340 24                                                                  | 1.53621500 05                                              |
| 2300                                           | 2400                                           | 1.55776500 24                                                                  | 1.31775190 05                                              |
| 2400                                           | 2500                                           | 1.40080990 24                                                                  | 1.13656800 05                                              |
| 2500                                           | 2600                                           | 1.25401880 24                                                                  | 9.85326550 04                                              |
| 2600                                           | 2700                                           | 1.14429480 24                                                                  | 8.58311800 04                                              |
| 2700                                           | 2800                                           | 1.03908660 24                                                                  | 7.51034080 04                                              |
| 2800                                           | 2900                                           | 9.46281660 23                                                                  | 6.59940670 04                                              |
| 2900                                           | 3000                                           | 8.64121540 23                                                                  | 5.82139670 04                                              |
| 3000                                           | 3200                                           | 1.51722420 24                                                                  | 9.73659650 04                                              |
| 3200                                           | 3400                                           | 1.28373430 24                                                                  | 7.73781740 04                                              |
| 3400                                           | 3600                                           | 1.09556970 24                                                                  | 6.22554240 04                                              |
| 3600                                           | 3800                                           | 9.42298420 23                                                                  | 5.06463080 04                                              |
| 3800                                           | 4000                                           | 8.16227770 23                                                                  | 4.16169240 04                                              |
| 4000                                           | 4200                                           | 7.11604640 23                                                                  | 3.45100420 04                                              |
| 4200                                           | 4400                                           | 6.24070850 23                                                                  | 2.88554380 04                                              |
| 4400                                           | 4600                                           | 5.50295510 23                                                                  | 2.43115700 04                                              |
| 4600                                           | 4800                                           | 4.87659380 23                                                                  | 2.06269200 04                                              |
| 4800                                           | 5000                                           | 4.34165410 23                                                                  | 1.76139000 04                                              |
| 5000                                           | 5500                                           | 8.97715050 23                                                                  | 3.40719760 04                                              |
| 5500                                           | 6000                                           | 6.94458030 23                                                                  | 2.40543160 04                                              |
| 6000                                           | 6500                                           | 5.48155820 23                                                                  | 1.74614930 04                                              |
| 6500                                           | 7000                                           | 4.40194850 23                                                                  | 1.29799810 04                                              |
| 7000                                           | 7500                                           | 3.58803540 23                                                                  | 9.84807810 03                                              |
| 7500                                           | 8000                                           | 2.96291200 23                                                                  | 7.60620720 03                                              |
| 8000                                           | 8500                                           | 2.47489500 23                                                                  | 5.36741760 03                                              |
| 8500                                           | 9000                                           | 2.08838280 23                                                                  | 4.74710900 03                                              |
| 9000                                           | 9500                                           | 1.77831010 23                                                                  | 3.82336060 03                                              |
| 9500                                           | 10000                                          | 1.52668430 23                                                                  | 3.11374820 03                                              |
| 10000                                          | 11000                                          | 2.45395760 23                                                                  | 4.68760580 03                                              |
| 11000                                          | 12000                                          | 1.89415450 23                                                                  | 3.28062940 03                                              |
| 12000                                          | 13000                                          | 1.48430190 23                                                                  | 2.36422460 03                                              |
| 13000                                          | 14000                                          | 1.18466840 23                                                                  | 1.74667070 03                                              |
| 14000                                          | 15000                                          | 9.60556970 22                                                                  | 1.31825690 03                                              |
| 15000                                          | 16000                                          | 7.89595030 22                                                                  | 1.01352330 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 8000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 1.90828720 24                                                                | 1.24301430 06                                             |
| 310                                    | 320                                    | 2.02369590 24                                                                | 1.27636790 06                                             |
| 320                                    | 330                                    | 2.13023740 24                                                                | 1.30224690 06                                             |
| 330                                    | 340                                    | 2.22758580 24                                                                | 1.32112730 06                                             |
| 340                                    | 350                                    | 2.31560440 24                                                                | 1.33353880 06                                             |
| 350                                    | 360                                    | 2.39431470 24                                                                | 1.34004010 06                                             |
| 360                                    | 370                                    | 2.46386670 24                                                                | 1.34119860 06                                             |
| 370                                    | 380                                    | 2.52451270 24                                                                | 1.33757540 06                                             |
| 380                                    | 390                                    | 2.57658400 24                                                                | 1.32971410 06                                             |
| 390                                    | 400                                    | 2.62047020 24                                                                | 1.31813270 06                                             |
| 400                                    | 410                                    | 2.65660240 24                                                                | 1.30331820 06                                             |
| 410                                    | 420                                    | 2.68543810 24                                                                | 1.28572350 06                                             |
| 420                                    | 430                                    | 2.70744940 24                                                                | 1.26576570 06                                             |
| 430                                    | 440                                    | 2.72311350 24                                                                | 1.24382570 06                                             |
| 440                                    | 450                                    | 2.73290430 24                                                                | 1.22024870 06                                             |
| 450                                    | 460                                    | 2.73728670 24                                                                | 1.19534590 06                                             |
| 460                                    | 470                                    | 2.73671160 24                                                                | 1.16939550 06                                             |
| 470                                    | 480                                    | 2.73161290 24                                                                | 1.14264510 06                                             |
| 480                                    | 490                                    | 2.72240450 24                                                                | 1.11531390 06                                             |
| 490                                    | 500                                    | 2.70947900 24                                                                | 1.08759470 06                                             |
| 500                                    | 510                                    | 2.69320660 24                                                                | 1.05965620 06                                             |
| 510                                    | 520                                    | 2.67393470 24                                                                | 1.03164530 06                                             |
| 520                                    | 530                                    | 2.65198800 24                                                                | 1.00368900 06                                             |
| 530                                    | 540                                    | 2.62766850 24                                                                | 9.75896430 05                                             |
| 540                                    | 550                                    | 2.60125640 24                                                                | 9.48360790 05                                             |
| 550                                    | 560                                    | 2.57301080 24                                                                | 9.21160930 05                                             |
| 560                                    | 570                                    | 2.54317060 24                                                                | 8.94363030 05                                             |
| 570                                    | 580                                    | 2.51195520 24                                                                | 8.68021990 05                                             |
| 580                                    | 590                                    | 2.47956600 24                                                                | 8.42182760 05                                             |
| 590                                    | 600                                    | 2.44618700 24                                                                | 8.16881540 05                                             |
| 600                                    | 610                                    | 2.41198640 24                                                                | 7.92146840 05                                             |
| 610                                    | 620                                    | 2.37711700 24                                                                | 7.68000450 05                                             |
| 620                                    | 630                                    | 2.34171790 24                                                                | 7.44458330 05                                             |
| 630                                    | 640                                    | 2.30591510 24                                                                | 7.21531350 05                                             |
| 640                                    | 650                                    | 2.26982230 24                                                                | 6.99225970 05                                             |
| 650                                    | 660                                    | 2.23354240 24                                                                | 6.77544900 05                                             |
| 660                                    | 670                                    | 2.19716780 24                                                                | 6.56487620 05                                             |
| 670                                    | 680                                    | 2.16078160 24                                                                | 6.36050830 05                                             |
| 680                                    | 690                                    | 2.12445810 24                                                                | 6.16228930 05                                             |
| 690                                    | 700                                    | 2.08826350 24                                                                | 5.97014320 05                                             |
| 700                                    | 710                                    | 2.05225700 24                                                                | 5.78397830 05                                             |
| 710                                    | 720                                    | 2.01649090 24                                                                | 5.60368880 05                                             |
| 720                                    | 730                                    | 1.98101150 24                                                                | 5.42915850 05                                             |
| 730                                    | 740                                    | 1.94585930 24                                                                | 5.26026230 05                                             |
| 740                                    | 750                                    | 1.91107000 24                                                                | 5.09686820 05                                             |
| 750                                    | 760                                    | 1.87667470 24                                                                | 4.93883910 05                                             |
| 760                                    | 770                                    | 1.84270000 24                                                                | 4.78603420 05                                             |
| 770                                    | 780                                    | 1.80916890 24                                                                | 4.63831020 05                                             |
| 780                                    | 790                                    | 1.77610100 24                                                                | 4.49552220 05                                             |
| 790                                    | 800                                    | 1.74351260 24                                                                | 4.35752500 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 8000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 1.71141740 24                                                                | 4.22417360 05                                             |
| 810                                    | 820                                    | 1.67982620 24                                                                | 4.09532380 05                                             |
| 820                                    | 830                                    | 1.64874800 24                                                                | 3.97083280 05                                             |
| 830                                    | 840                                    | 1.61818920 24                                                                | 3.85056000 05                                             |
| 840                                    | 850                                    | 1.58815470 24                                                                | 3.73436670 05                                             |
| 850                                    | 860                                    | 1.55864770 24                                                                | 3.62211710 05                                             |
| 860                                    | 870                                    | 1.52966960 24                                                                | 3.51367820 05                                             |
| 870                                    | 880                                    | 1.50122090 24                                                                | 3.40891990 05                                             |
| 880                                    | 890                                    | 1.47330060 24                                                                | 3.30771540 05                                             |
| 890                                    | 900                                    | 1.44590670 24                                                                | 3.20994140 05                                             |
| 900                                    | 910                                    | 1.41903650 24                                                                | 3.11547780 05                                             |
| 910                                    | 920                                    | 1.39268610 24                                                                | 3.02420780 05                                             |
| 920                                    | 930                                    | 1.36685110 24                                                                | 2.93601850 05                                             |
| 930                                    | 940                                    | 1.34152650 24                                                                | 2.85080020 05                                             |
| 940                                    | 950                                    | 1.31670660 24                                                                | 2.76844670 05                                             |
| 950                                    | 960                                    | 1.29238530 24                                                                | 2.68885530 05                                             |
| 960                                    | 970                                    | 1.26855610 24                                                                | 2.61192660 05                                             |
| 970                                    | 980                                    | 1.24521200 24                                                                | 2.53756480 05                                             |
| 980                                    | 990                                    | 1.22234600 24                                                                | 2.46567720 05                                             |
| 990                                    | 1000                                   | 1.19995060 24                                                                | 2.39617430 05                                             |
| 1000                                   | 1010                                   | 1.17801810 24                                                                | 2.32896980 05                                             |
| 1010                                   | 1020                                   | 1.15654070 24                                                                | 2.26398060 05                                             |
| 1020                                   | 1030                                   | 1.13551060 24                                                                | 2.20112640 05                                             |
| 1030                                   | 1040                                   | 1.11491960 24                                                                | 2.14033000 05                                             |
| 1040                                   | 1050                                   | 1.09475980 24                                                                | 2.08151680 05                                             |
| 1050                                   | 1060                                   | 1.07502290 24                                                                | 2.02461530 05                                             |
| 1060                                   | 1070                                   | 1.05570090 24                                                                | 1.96955620 05                                             |
| 1070                                   | 1080                                   | 1.03678550 24                                                                | 1.91627320 05                                             |
| 1080                                   | 1090                                   | 1.01826870 24                                                                | 1.86470220 05                                             |
| 1090                                   | 1100                                   | 1.00014230 24                                                                | 1.81478170 05                                             |
| 1100                                   | 1110                                   | 9.82398390 23                                                                | 1.76645240 05                                             |
| 1110                                   | 1120                                   | 9.65028910 23                                                                | 1.71965730 05                                             |
| 1120                                   | 1130                                   | 9.48025990 23                                                                | 1.67434150 05                                             |
| 1130                                   | 1140                                   | 9.31381810 23                                                                | 1.63045230 05                                             |
| 1140                                   | 1150                                   | 9.15088670 23                                                                | 1.58793890 05                                             |
| 1150                                   | 1160                                   | 8.99138930 23                                                                | 1.54675240 05                                             |
| 1160                                   | 1170                                   | 8.83525110 23                                                                | 1.50684580 05                                             |
| 1170                                   | 1180                                   | 8.68239790 23                                                                | 1.46817410 05                                             |
| 1180                                   | 1190                                   | 8.53275710 23                                                                | 1.43069370 05                                             |
| 1190                                   | 1200                                   | 8.38625700 23                                                                | 1.39436280 05                                             |
| 1200                                   | 1210                                   | 8.24282730 23                                                                | 1.35914120 05                                             |
| 1210                                   | 1220                                   | 8.10239890 23                                                                | 1.32499020 05                                             |
| 1220                                   | 1230                                   | 7.96490410 23                                                                | 1.29187260 05                                             |
| 1230                                   | 1240                                   | 7.83027630 23                                                                | 1.25975250 05                                             |
| 1240                                   | 1250                                   | 7.69845030 23                                                                | 1.22859570 05                                             |
| 1250                                   | 1260                                   | 7.56936220 23                                                                | 1.19836880 05                                             |
| 1260                                   | 1270                                   | 7.44294940 23                                                                | 1.16904000 05                                             |
| 1270                                   | 1280                                   | 7.31915070 23                                                                | 1.14057870 05                                             |
| 1280                                   | 1290                                   | 7.19790600 23                                                                | 1.11295520 05                                             |
| 1290                                   | 1300                                   | 7.07915660 23                                                                | 1.08614120 05                                             |
| 1300                                   | 1310                                   | 6.96284510 23                                                                | 1.06010940 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 8000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 6.84891540 23                                                                | 1.03483340 05                                             |
| 1320                                   | 1330                                   | 6.73731250 23                                                                | 1.01028780 05                                             |
| 1330                                   | 1340                                   | 6.62798280 23                                                                | 9.86448280 04                                             |
| 1340                                   | 1350                                   | 6.52087380 23                                                                | 9.63291310 04                                             |
| 1350                                   | 1360                                   | 6.41593430 23                                                                | 9.40794270 04                                             |
| 1360                                   | 1370                                   | 6.31311430 23                                                                | 9.18935380 04                                             |
| 1370                                   | 1380                                   | 6.21236490 23                                                                | 8.97693650 04                                             |
| 1380                                   | 1390                                   | 6.11363830 23                                                                | 8.77048860 04                                             |
| 1390                                   | 1400                                   | 6.01688800 23                                                                | 8.56981540 04                                             |
| 1400                                   | 1410                                   | 5.92206850 23                                                                | 8.37472920 04                                             |
| 1410                                   | 1420                                   | 5.82913530 23                                                                | 8.18504930 04                                             |
| 1420                                   | 1430                                   | 5.73804520 23                                                                | 8.00060140 04                                             |
| 1430                                   | 1440                                   | 5.64875590 23                                                                | 7.82121750 04                                             |
| 1440                                   | 1450                                   | 5.56122600 23                                                                | 7.64673590 04                                             |
| 1450                                   | 1460                                   | 5.47541530 23                                                                | 7.47700030 04                                             |
| 1460                                   | 1470                                   | 5.39128450 23                                                                | 7.31186040 04                                             |
| 1470                                   | 1480                                   | 5.30879540 23                                                                | 7.15117100 04                                             |
| 1480                                   | 1490                                   | 5.22791040 23                                                                | 6.99479220 04                                             |
| 1490                                   | 1500                                   | 5.14859320 23                                                                | 6.84258900 04                                             |
| 1500                                   | 1510                                   | 5.07080810 23                                                                | 6.69443120 04                                             |
| 1510                                   | 1520                                   | 4.99452040 23                                                                | 6.55019320 04                                             |
| 1520                                   | 1530                                   | 4.91969630 23                                                                | 6.40975370 04                                             |
| 1530                                   | 1540                                   | 4.84630280 23                                                                | 6.27299580 04                                             |
| 1540                                   | 1550                                   | 4.77430770 23                                                                | 6.13980660 04                                             |
| 1550                                   | 1560                                   | 4.70367950 23                                                                | 6.01007710 04                                             |
| 1560                                   | 1570                                   | 4.63438770 23                                                                | 5.88370210 04                                             |
| 1570                                   | 1580                                   | 4.56640220 23                                                                | 5.76058000 04                                             |
| 1580                                   | 1590                                   | 4.49969410 23                                                                | 5.64061260 04                                             |
| 1590                                   | 1600                                   | 4.43423480 23                                                                | 5.52370530 04                                             |
| 1600                                   | 1610                                   | 4.36999670 23                                                                | 5.40976640 04                                             |
| 1610                                   | 1620                                   | 4.30695270 23                                                                | 5.29870770 04                                             |
| 1620                                   | 1630                                   | 4.24507640 23                                                                | 5.19044370 04                                             |
| 1630                                   | 1640                                   | 4.18434210 23                                                                | 5.08489190 04                                             |
| 1640                                   | 1650                                   | 4.12472480 23                                                                | 4.98197240 04                                             |
| 1650                                   | 1660                                   | 4.06619990 23                                                                | 4.88160820 04                                             |
| 1660                                   | 1670                                   | 4.00874350 23                                                                | 4.78372480 04                                             |
| 1670                                   | 1680                                   | 3.95233250 23                                                                | 4.68825000 04                                             |
| 1680                                   | 1690                                   | 3.89694400 23                                                                | 4.59511430 04                                             |
| 1690                                   | 1700                                   | 3.84255590 23                                                                | 4.50425020 04                                             |
| 1700                                   | 1710                                   | 3.78914670 23                                                                | 4.41559260 04                                             |
| 1710                                   | 1720                                   | 3.73669510 23                                                                | 4.32907850 04                                             |
| 1720                                   | 1730                                   | 3.68518060 23                                                                | 4.24464680 04                                             |
| 1730                                   | 1740                                   | 3.63458320 23                                                                | 4.16223860 04                                             |
| 1740                                   | 1750                                   | 3.58488320 23                                                                | 4.08179670 04                                             |
| 1750                                   | 1760                                   | 3.53606160 23                                                                | 4.00326600 04                                             |
| 1760                                   | 1770                                   | 3.48809960 23                                                                | 3.92659300 04                                             |
| 1770                                   | 1780                                   | 3.44097910 23                                                                | 3.85172570 04                                             |
| 1780                                   | 1790                                   | 3.39468240 23                                                                | 3.77861430 04                                             |
| 1790                                   | 1800                                   | 3.34919200 23                                                                | 3.70721000 04                                             |
| 1800                                   | 1810                                   | 3.30449110 23                                                                | 3.63746600 04                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 8000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 3.26056320 23                                                                | 3.56933660 04                                             |
| 1820                                   | 1830                                   | 3.21739210 23                                                                | 3.50277790 04                                             |
| 1830                                   | 1840                                   | 3.17496200 23                                                                | 3.43774700 04                                             |
| 1840                                   | 1850                                   | 3.13325780 23                                                                | 3.37420260 04                                             |
| 1850                                   | 1860                                   | 3.09226420 23                                                                | 3.31210470 04                                             |
| 1860                                   | 1870                                   | 3.05196680 23                                                                | 3.25141420 04                                             |
| 1870                                   | 1880                                   | 3.01235120 23                                                                | 3.19209370 04                                             |
| 1880                                   | 1890                                   | 2.97340340 23                                                                | 3.13410650 04                                             |
| 1890                                   | 1900                                   | 2.93510990 23                                                                | 3.07741730 04                                             |
| 1900                                   | 1910                                   | 2.89745730 23                                                                | 3.02199170 04                                             |
| 1910                                   | 1920                                   | 2.86043260 23                                                                | 2.96779640 04                                             |
| 1920                                   | 1930                                   | 2.82402310 23                                                                | 2.91479930 04                                             |
| 1930                                   | 1940                                   | 2.78821650 23                                                                | 2.86296890 04                                             |
| 1940                                   | 1950                                   | 2.75300070 23                                                                | 2.81227500 04                                             |
| 1950                                   | 1960                                   | 2.71836370 23                                                                | 2.76268800 04                                             |
| 1960                                   | 1970                                   | 2.68429410 23                                                                | 2.71417940 04                                             |
| 1970                                   | 1980                                   | 2.65078050 23                                                                | 2.66672140 04                                             |
| 1980                                   | 1990                                   | 2.61781200 23                                                                | 2.62028720 04                                             |
| 1990                                   | 2000                                   | 2.58537780 23                                                                | 2.57485060 04                                             |
| 2000                                   | 2010                                   | 2.55346730 23                                                                | 2.53038620 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 8000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 2.41802050 24                                                                | 2.34517460 05                                             |
| 2100                                   | 2200                                   | 2.14532230 24                                                                | 1.98379960 05                                             |
| 2200                                   | 2300                                   | 1.91161130 24                                                                | 1.68903430 05                                             |
| 2300                                   | 2400                                   | 1.71026200 24                                                                | 1.44675990 05                                             |
| 2400                                   | 2500                                   | 1.53543310 24                                                                | 1.24620750 05                                             |
| 2500                                   | 2600                                   | 1.38429190 24                                                                | 1.07908580 05                                             |
| 2600                                   | 2700                                   | 1.25180250 24                                                                | 9.38954180 04                                             |
| 2700                                   | 2800                                   | 1.13556260 24                                                                | 8.20767670 04                                             |
| 2800                                   | 2900                                   | 1.03317670 24                                                                | 7.20543520 04                                             |
| 2900                                   | 3000                                   | 9.42656870 23                                                                | 6.35114140 04                                             |
| 3000                                   | 3200                                   | 1.65319610 24                                                                | 1.06092650 05                                             |
| 3200                                   | 3400                                   | 1.39682160 24                                                                | 8.41951610 04                                             |
| 3400                                   | 3600                                   | 1.19061610 24                                                                | 6.76567810 04                                             |
| 3600                                   | 3800                                   | 1.02293510 24                                                                | 5.49805910 04                                             |
| 3800                                   | 4000                                   | 8.85218710 23                                                                | 4.51347340 04                                             |
| 4000                                   | 4200                                   | 7.71083330 23                                                                | 3.73946510 04                                             |
| 4200                                   | 4400                                   | 6.75704830 23                                                                | 3.12429510 04                                             |
| 4400                                   | 4600                                   | 5.95393090 23                                                                | 2.63044850 04                                             |
| 4600                                   | 4800                                   | 5.27293710 23                                                                | 2.23034130 04                                             |
| 4800                                   | 5000                                   | 4.69175840 23                                                                | 1.90342940 04                                             |
| 5000                                   | 5500                                   | 9.69247350 23                                                                | 3.67872770 04                                             |
| 5500                                   | 6000                                   | 7.48959700 23                                                                | 2.59423080 04                                             |
| 6000                                   | 6500                                   | 5.90628120 23                                                                | 1.88145530 04                                             |
| 6500                                   | 7000                                   | 4.73931000 23                                                                | 1.39748170 04                                             |
| 7000                                   | 7500                                   | 3.86043170 23                                                                | 1.05957620 04                                             |
| 7500                                   | 8000                                   | 3.18600160 23                                                                | 8.17893300 03                                             |
| 8000                                   | 8500                                   | 2.65989080 23                                                                | 6.41349110 03                                             |
| 8500                                   | 9000                                   | 2.24348410 23                                                                | 5.09968050 03                                             |
| 9000                                   | 9500                                   | 1.90962440 23                                                                | 4.10569290 03                                             |
| 9500                                   | 10000                                  | 1.63883610 23                                                                | 3.34249220 03                                             |
| 10000                                  | 11000                                  | 2.65020060 23                                                                | 5.02970280 03                                             |
| 11000                                  | 12000                                  | 2.03130440 23                                                                | 3.51818170 03                                             |
| 12000                                  | 13000                                  | 1.59107270 23                                                                | 2.53429800 03                                             |
| 13000                                  | 14000                                  | 1.26941030 23                                                                | 1.87161770 03                                             |
| 14000                                  | 15000                                  | 1.02893680 23                                                                | 1.41210300 03                                             |
| 15000                                  | 16000                                  | 8.45568540 22                                                                | 1.08537230 03                                             |

R.K.H. Gehel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 8500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 2.7025380D 24                                                                | 1.7604248D 06                                             |
| 310                                    | 320                                    | 2.8351393D 24                                                                | 1.7882039D 06                                             |
| 320                                    | 330                                    | 2.9543240D 24                                                                | 1.8060692D 06                                             |
| 330                                    | 340                                    | 3.0601238D 24                                                                | 1.8149271D 06                                             |
| 340                                    | 350                                    | 3.1527782D 24                                                                | 1.8156988D 06                                             |
| 350                                    | 360                                    | 3.2326889D 24                                                                | 1.8092925D 06                                             |
| 360                                    | 370                                    | 3.3003806D 24                                                                | 1.7965840D 06                                             |
| 370                                    | 380                                    | 3.3564667D 24                                                                | 1.7784025D 06                                             |
| 380                                    | 390                                    | 3.4016204D 24                                                                | 1.7555219D 06                                             |
| 390                                    | 400                                    | 3.4365510D 24                                                                | 1.7286563D 06                                             |
| 400                                    | 410                                    | 3.4619851D 24                                                                | 1.6984571D 06                                             |
| 410                                    | 420                                    | 3.4786505D 24                                                                | 1.6655142D 06                                             |
| 420                                    | 430                                    | 3.4872648D 24                                                                | 1.6303566D 06                                             |
| 430                                    | 440                                    | 3.4885260D 24                                                                | 1.5934561D 06                                             |
| 440                                    | 450                                    | 3.4831057D 24                                                                | 1.5552302D 06                                             |
| 450                                    | 460                                    | 3.4716446D 24                                                                | 1.5160460D 06                                             |
| 460                                    | 470                                    | 3.4547489D 24                                                                | 1.4762245D 06                                             |
| 470                                    | 480                                    | 3.4329890D 24                                                                | 1.4360446D 06                                             |
| 480                                    | 490                                    | 3.4068981D 24                                                                | 1.3957470D 06                                             |
| 490                                    | 500                                    | 3.3769723D 24                                                                | 1.3555380D 06                                             |
| 500                                    | 510                                    | 3.3436714D 24                                                                | 1.3155932D 06                                             |
| 510                                    | 520                                    | 3.3074196D 24                                                                | 1.2760611D 06                                             |
| 520                                    | 530                                    | 3.2686071D 24                                                                | 1.2370656D 06                                             |
| 530                                    | 540                                    | 3.2275915D 24                                                                | 1.1987096D 06                                             |
| 540                                    | 550                                    | 3.1846994D 24                                                                | 1.1610770D 06                                             |
| 550                                    | 560                                    | 3.1402287D 24                                                                | 1.1242352D 06                                             |
| 560                                    | 570                                    | 3.0944498D 24                                                                | 1.0882375D 06                                             |
| 570                                    | 580                                    | 3.0476078D 24                                                                | 1.0531245D 06                                             |
| 580                                    | 590                                    | 2.9999246D 24                                                                | 1.0189262D 06                                             |
| 590                                    | 600                                    | 2.9515999D 24                                                                | 9.8566312D 05                                             |
| 600                                    | 610                                    | 2.9028134D 24                                                                | 9.5334803D 05                                             |
| 610                                    | 620                                    | 2.8537264D 24                                                                | 9.2198676D 05                                             |
| 620                                    | 630                                    | 2.8044831D 24                                                                | 8.9157937D 05                                             |
| 630                                    | 640                                    | 2.7552122D 24                                                                | 8.6212105D 05                                             |
| 640                                    | 650                                    | 2.7060282D 24                                                                | 8.3360294D 05                                             |
| 650                                    | 660                                    | 2.6570323D 24                                                                | 8.0601272D 05                                             |
| 660                                    | 670                                    | 2.6083144D 24                                                                | 7.7933532D 05                                             |
| 670                                    | 680                                    | 2.5599531D 24                                                                | 7.5355337D 05                                             |
| 680                                    | 690                                    | 2.5120175D 24                                                                | 7.2864768D 05                                             |
| 690                                    | 700                                    | 2.4645678D 24                                                                | 7.0459763D 05                                             |
| 700                                    | 710                                    | 2.4176561D 24                                                                | 6.8138152D 05                                             |
| 710                                    | 720                                    | 2.3713274D 24                                                                | 6.5897683D 05                                             |
| 720                                    | 730                                    | 2.3256200D 24                                                                | 6.3736048D 05                                             |
| 730                                    | 740                                    | 2.2805663D 24                                                                | 6.1650907D 05                                             |
| 740                                    | 750                                    | 2.2361933D 24                                                                | 5.9639901D 05                                             |
| 750                                    | 760                                    | 2.1925235D 24                                                                | 5.7700674D 05                                             |
| 760                                    | 770                                    | 2.1495748D 24                                                                | 5.5830877D 05                                             |
| 770                                    | 780                                    | 2.1073615D 24                                                                | 5.4028186D 05                                             |
| 780                                    | 790                                    | 2.0658942D 24                                                                | 5.2290310D 05                                             |
| 790                                    | 800                                    | 2.0251806D 24                                                                | 5.0614992D 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 8500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 1.9852256D 24                                                                | 4.9000024D 05                                             |
| 810                                    | 820                                    | 1.9460318D 24                                                                | 4.7443245D 05                                             |
| 820                                    | 830                                    | 1.9075994D 24                                                                | 4.5942546D 05                                             |
| 830                                    | 840                                    | 1.8699269D 24                                                                | 4.4495875D 05                                             |
| 840                                    | 850                                    | 1.8330111D 24                                                                | 4.3101238D 05                                             |
| 850                                    | 860                                    | 1.7968471D 24                                                                | 4.1756697D 05                                             |
| 860                                    | 870                                    | 1.7614289D 24                                                                | 4.0460378D 05                                             |
| 870                                    | 880                                    | 1.7267494D 24                                                                | 3.9210463D 05                                             |
| 880                                    | 890                                    | 1.6928005D 24                                                                | 3.8005197D 05                                             |
| 890                                    | 900                                    | 1.6595730D 24                                                                | 3.6842884D 05                                             |
| 900                                    | 910                                    | 1.6270574D 24                                                                | 3.5721886D 05                                             |
| 910                                    | 920                                    | 1.5952433D 24                                                                | 3.4640625D 05                                             |
| 920                                    | 930                                    | 1.5641199D 24                                                                | 3.3597580D 05                                             |
| 930                                    | 940                                    | 1.5336758D 24                                                                | 3.2591283D 05                                             |
| 940                                    | 950                                    | 1.5038995D 24                                                                | 3.1620325D 05                                             |
| 950                                    | 960                                    | 1.4747791D 24                                                                | 3.0683347D 05                                             |
| 960                                    | 970                                    | 1.4463025D 24                                                                | 2.9779045D 05                                             |
| 970                                    | 980                                    | 1.4184574D 24                                                                | 2.8906163D 05                                             |
| 980                                    | 990                                    | 1.3912314D 24                                                                | 2.8063494D 05                                             |
| 990                                    | 1000                                   | 1.3646121D 24                                                                | 2.7249879D 05                                             |
| 1000                                   | 1010                                   | 1.3385871D 24                                                                | 2.6464204D 05                                             |
| 1010                                   | 1020                                   | 1.3131438D 24                                                                | 2.5705400D 05                                             |
| 1020                                   | 1030                                   | 1.2882700D 24                                                                | 2.4972440D 05                                             |
| 1030                                   | 1040                                   | 1.2639532D 24                                                                | 2.4264337D 05                                             |
| 1040                                   | 1050                                   | 1.2401812D 24                                                                | 2.3580147D 05                                             |
| 1050                                   | 1060                                   | 1.2169419D 24                                                                | 2.2918959D 05                                             |
| 1060                                   | 1070                                   | 1.1942233D 24                                                                | 2.2279902D 05                                             |
| 1070                                   | 1080                                   | 1.1720135D 24                                                                | 2.1662140D 05                                             |
| 1080                                   | 1090                                   | 1.1503009D 24                                                                | 2.1064870D 05                                             |
| 1090                                   | 1100                                   | 1.1290739D 24                                                                | 2.0487321D 05                                             |
| 1100                                   | 1110                                   | 1.1083212D 24                                                                | 1.9928754D 05                                             |
| 1110                                   | 1120                                   | 1.0880316D 24                                                                | 1.9388459D 05                                             |
| 1120                                   | 1130                                   | 1.0681942D 24                                                                | 1.8865756D 05                                             |
| 1130                                   | 1140                                   | 1.0487982D 24                                                                | 1.8359991D 05                                             |
| 1140                                   | 1150                                   | 1.0298331D 24                                                                | 1.7870539D 05                                             |
| 1150                                   | 1160                                   | 1.0112886D 24                                                                | 1.7396796D 05                                             |
| 1160                                   | 1170                                   | 9.9315445D 23                                                                | 1.6938186D 05                                             |
| 1170                                   | 1180                                   | 9.7542083D 23                                                                | 1.6494155D 05                                             |
| 1180                                   | 1190                                   | 9.5807800D 23                                                                | 1.6064171D 05                                             |
| 1190                                   | 1200                                   | 9.4111646D 23                                                                | 1.5647723D 05                                             |
| 1200                                   | 1210                                   | 9.2452695D 23                                                                | 1.5244322D 05                                             |
| 1210                                   | 1220                                   | 9.0830037D 23                                                                | 1.4853496D 05                                             |
| 1220                                   | 1230                                   | 8.9242788D 23                                                                | 1.4474794D 05                                             |
| 1230                                   | 1240                                   | 8.7690081D 23                                                                | 1.4107783D 05                                             |
| 1240                                   | 1250                                   | 8.6171071D 23                                                                | 1.3752046D 05                                             |
| 1250                                   | 1260                                   | 8.4684934D 23                                                                | 1.3407181D 05                                             |
| 1260                                   | 1270                                   | 8.3230863D 23                                                                | 1.3072807D 05                                             |
| 1270                                   | 1280                                   | 8.1808074D 23                                                                | 1.2748552D 05                                             |
| 1280                                   | 1290                                   | 8.0415801D 23                                                                | 1.2434062D 05                                             |
| 1290                                   | 1300                                   | 7.9053295D 23                                                                | 1.2128997D 05                                             |
| 1300                                   | 1310                                   | 7.7719830D 23                                                                | 1.1833029D 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 8500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 7.64146950 23                                                                  | 1.15458420 05                                              |
| 1320                                           | 1330                                           | 7.51371960 23                                                                  | 1.12671360 05                                              |
| 1330                                           | 1340                                           | 7.38866610 23                                                                  | 1.09966170 05                                              |
| 1340                                           | 1350                                           | 7.26624310 23                                                                  | 1.07340070 05                                              |
| 1350                                           | 1360                                           | 7.14638660 23                                                                  | 1.04790370 05                                              |
| 1360                                           | 1370                                           | 7.02903420 23                                                                  | 1.02314480 05                                              |
| 1370                                           | 1380                                           | 6.91412500 23                                                                  | 9.99099010 04                                              |
| 1380                                           | 1390                                           | 6.80159980 23                                                                  | 9.75742510 04                                              |
| 1390                                           | 1400                                           | 6.69140100 23                                                                  | 9.53052220 04                                              |
| 1400                                           | 1410                                           | 6.58347240 23                                                                  | 9.31005970 04                                              |
| 1410                                           | 1420                                           | 6.47775920 23                                                                  | 9.09582410 04                                              |
| 1420                                           | 1430                                           | 6.37420810 23                                                                  | 8.88761010 04                                              |
| 1430                                           | 1440                                           | 6.27276720 23                                                                  | 8.68521990 04                                              |
| 1440                                           | 1450                                           | 6.17338600 23                                                                  | 8.48846310 04                                              |
| 1450                                           | 1460                                           | 6.07601520 23                                                                  | 8.29715630 04                                              |
| 1460                                           | 1470                                           | 5.98060690 23                                                                  | 8.11112280 04                                              |
| 1470                                           | 1480                                           | 5.98711440 23                                                                  | 7.93019250 04                                              |
| 1480                                           | 1490                                           | 5.79549220 23                                                                  | 7.75420150 04                                              |
| 1490                                           | 1500                                           | 5.70569610 23                                                                  | 7.58299190 04                                              |
| 1500                                           | 1510                                           | 5.61768300 23                                                                  | 7.41641140 04                                              |
| 1510                                           | 1520                                           | 5.53141080 23                                                                  | 7.25431320 04                                              |
| 1520                                           | 1530                                           | 5.44683870 23                                                                  | 7.09655600 04                                              |
| 1530                                           | 1540                                           | 5.36392690 23                                                                  | 6.94300330 04                                              |
| 1540                                           | 1550                                           | 5.28263660 23                                                                  | 6.79352370 04                                              |
| 1550                                           | 1560                                           | 5.20293000 23                                                                  | 6.64799030 04                                              |
| 1560                                           | 1570                                           | 5.12477040 23                                                                  | 6.50628070 04                                              |
| 1570                                           | 1580                                           | 5.04812190 23                                                                  | 6.36827700 04                                              |
| 1580                                           | 1590                                           | 4.97294970 23                                                                  | 6.23386530 04                                              |
| 1590                                           | 1600                                           | 4.89921970 23                                                                  | 6.10293560 04                                              |
| 1600                                           | 1610                                           | 4.82689890 23                                                                  | 5.97538200 04                                              |
| 1610                                           | 1620                                           | 4.75595500 23                                                                  | 5.85110190 04                                              |
| 1620                                           | 1630                                           | 4.68635660 23                                                                  | 5.72999670 04                                              |
| 1630                                           | 1640                                           | 4.61807320 23                                                                  | 5.61197090 04                                              |
| 1640                                           | 1650                                           | 4.55107480 23                                                                  | 5.49693220 04                                              |
| 1650                                           | 1660                                           | 4.48533260 23                                                                  | 5.38479170 04                                              |
| 1660                                           | 1670                                           | 4.42081810 23                                                                  | 5.27546340 04                                              |
| 1670                                           | 1680                                           | 4.35750380 23                                                                  | 5.16886420 04                                              |
| 1680                                           | 1690                                           | 4.29536280 23                                                                  | 5.06491380 04                                              |
| 1690                                           | 1700                                           | 4.23436900 23                                                                  | 4.96353480 04                                              |
| 1700                                           | 1710                                           | 4.17449690 23                                                                  | 4.86465200 04                                              |
| 1710                                           | 1720                                           | 4.11572150 23                                                                  | 4.76819310 04                                              |
| 1720                                           | 1730                                           | 4.05801870 23                                                                  | 4.67408790 04                                              |
| 1730                                           | 1740                                           | 4.00136480 23                                                                  | 4.58226870 04                                              |
| 1740                                           | 1750                                           | 3.94573680 23                                                                  | 4.49267010 04                                              |
| 1750                                           | 1760                                           | 3.89111230 23                                                                  | 4.40522850 04                                              |
| 1760                                           | 1770                                           | 3.83746930 23                                                                  | 4.31988280 04                                              |
| 1770                                           | 1780                                           | 3.78478660 23                                                                  | 4.23657360 04                                              |
| 1780                                           | 1790                                           | 3.73304330 23                                                                  | 4.15524350 04                                              |
| 1790                                           | 1800                                           | 3.68221920 23                                                                  | 4.07583710 04                                              |
| 1800                                           | 1810                                           | 3.63229440 23                                                                  | 3.99830060 04                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 8500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 3.58324980 23                                                                  | 3.92258180 04                                              |
| 1820                                           | 1830                                           | 3.53506640 23                                                                  | 3.84863060 04                                              |
| 1830                                           | 1840                                           | 3.48772600 23                                                                  | 3.77639810 04                                              |
| 1840                                           | 1850                                           | 3.44121060 23                                                                  | 3.70583720 04                                              |
| 1850                                           | 1860                                           | 3.39550280 23                                                                  | 3.63690200 04                                              |
| 1860                                           | 1870                                           | 3.35058560 23                                                                  | 3.56954830 04                                              |
| 1870                                           | 1880                                           | 3.30644230 23                                                                  | 3.50373310 04                                              |
| 1880                                           | 1890                                           | 3.26305680 23                                                                  | 3.43941500 04                                              |
| 1890                                           | 1900                                           | 3.22041320 23                                                                  | 3.37655360 04                                              |
| 1900                                           | 1910                                           | 3.17849600 23                                                                  | 3.31510990 04                                              |
| 1910                                           | 1920                                           | 3.13729030 23                                                                  | 3.25504610 04                                              |
| 1920                                           | 1930                                           | 3.09678140 23                                                                  | 3.19632540 04                                              |
| 1930                                           | 1940                                           | 3.05695480 23                                                                  | 3.13891230 04                                              |
| 1940                                           | 1950                                           | 3.01779660 23                                                                  | 3.08277240 04                                              |
| 1950                                           | 1960                                           | 2.97929310 23                                                                  | 3.02787230 04                                              |
| 1960                                           | 1970                                           | 2.94143100 23                                                                  | 2.97417940 04                                              |
| 1970                                           | 1980                                           | 2.90419730 23                                                                  | 2.92166240 04                                              |
| 1980                                           | 1990                                           | 2.86757910 23                                                                  | 2.87029070 04                                              |
| 1990                                           | 2000                                           | 2.83156420 23                                                                  | 2.82003480 04                                              |
| 2000                                           | 2010                                           | 2.79614040 23                                                                  | 2.77086600 04                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

$T = 8500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 2.64592090 24                                                                | 2.56622590 05                                             |
| 2100                                   | 2200                                   | 2.34393500 24                                                                | 2.16747080 05                                             |
| 2200                                   | 2300                                   | 2.08570780 24                                                                | 1.84286900 05                                             |
| 2300                                   | 2400                                   | 1.86368790 24                                                                | 1.57655400 05                                             |
| 2400                                   | 2500                                   | 1.67181390 24                                                                | 1.35646190 05                                             |
| 2500                                   | 2600                                   | 1.50518770 24                                                                | 1.17333060 05                                             |
| 2600                                   | 2700                                   | 1.35982580 24                                                                | 1.01998340 05                                             |
| 2700                                   | 2800                                   | 1.23246840 24                                                                | 8.90811990 04                                             |
| 2800                                   | 2900                                   | 1.12043230 24                                                                | 7.81397850 04                                             |
| 2900                                   | 3000                                   | 1.02149640 24                                                                | 6.88233610 04                                             |
| 3000                                   | 3200                                   | 1.78964630 24                                                                | 1.14850040 05                                             |
| 3200                                   | 3400                                   | 1.51025980 24                                                                | 9.10333180 04                                             |
| 3400                                   | 3600                                   | 1.28592480 24                                                                | 7.30730520 04                                             |
| 3600                                   | 3800                                   | 1.10377090 24                                                                | 5.93255820 04                                             |
| 3800                                   | 4000                                   | 9.54362990 23                                                                | 4.86603670 04                                             |
| 4000                                   | 4200                                   | 8.30681650 23                                                                | 4.02850640 04                                             |
| 4200                                   | 4400                                   | 7.27433230 23                                                                | 3.36348310 04                                             |
| 4400                                   | 4600                                   | 6.40575990 23                                                                | 2.83007290 04                                             |
| 4600                                   | 4800                                   | 5.66988700 23                                                                | 2.39824730 04                                             |
| 4800                                   | 5000                                   | 5.04235570 23                                                                | 2.04566890 04                                             |
| 5000                                   | 5500                                   | 1.04086790 24                                                                | 3.95059320 04                                             |
| 5500                                   | 6000                                   | 8.03517380 23                                                                | 2.78322440 04                                             |
| 6000                                   | 6500                                   | 6.33137350 23                                                                | 2.01687910 04                                             |
| 6500                                   | 7000                                   | 5.07672280 23                                                                | 1.49703950 04                                             |
| 7000                                   | 7500                                   | 4.13300380 23                                                                | 1.13439290 04                                             |
| 7500                                   | 8000                                   | 3.40921720 23                                                                | 8.75198240 03                                             |
| 8000                                   | 8500                                   | 2.84497880 23                                                                | 6.85978700 03                                             |
| 8500                                   | 9000                                   | 2.39865410 23                                                                | 5.45240810 03                                             |
| 9000                                   | 9500                                   | 2.04099080 23                                                                | 4.38813690 03                                             |
| 9500                                   | 10000                                  | 1.75102790 23                                                                | 3.57131780 03                                             |
| 10000                                  | 11000                                  | 2.83049940 23                                                                | 5.37190570 03                                             |
| 11000                                  | 12000                                  | 2.16848040 23                                                                | 3.75579520 03                                             |
| 12000                                  | 13000                                  | 1.69786680 23                                                                | 2.70440850 03                                             |
| 13000                                  | 14000                                  | 1.35416790 23                                                                | 1.99658800 03                                             |
| 14000                                  | 15000                                  | 1.09732770 23                                                                | 1.50596420 03                                             |
| 15000                                  | 16000                                  | 9.01549950 22                                                                | 1.15723150 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 9000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 300                                            | 310                                            | 3.6836894D 24                                                                  | 2.3996087D 06                                              |
| 310                                            | 320                                            | 3.8276197D 24                                                                  | 2.4142490D 06                                              |
| 320                                            | 330                                            | 3.9529648D 24                                                                  | 2.4166228D 06                                              |
| 330                                            | 340                                            | 4.0602979D 24                                                                  | 2.4081685D 06                                              |
| 340                                            | 350                                            | 4.1503914D 24                                                                  | 2.3902727D 06                                              |
| 350                                            | 360                                            | 4.2241595D 24                                                                  | 2.3642452D 06                                              |
| 360                                            | 370                                            | 4.2826100D 24                                                                  | 2.3313032D 06                                              |
| 370                                            | 380                                            | 4.3268053D 24                                                                  | 2.2925628D 06                                              |
| 380                                            | 390                                            | 4.3578305D 24                                                                  | 2.2490361D 06                                              |
| 390                                            | 400                                            | 4.3767692D 24                                                                  | 2.2016320D 06                                              |
| 400                                            | 410                                            | 4.3846843D 24                                                                  | 2.1511593D 06                                              |
| 410                                            | 420                                            | 4.3826042D 24                                                                  | 2.0983323D 06                                              |
| 420                                            | 430                                            | 4.3715125D 24                                                                  | 2.0437773D 06                                              |
| 430                                            | 440                                            | 4.3523414D 24                                                                  | 1.9880393D 06                                              |
| 440                                            | 450                                            | 4.3259671D 24                                                                  | 1.9315894D 06                                              |
| 450                                            | 460                                            | 4.2932081D 24                                                                  | 1.8748321D 06                                              |
| 460                                            | 470                                            | 4.2548240D 24                                                                  | 1.8181120D 06                                              |
| 470                                            | 480                                            | 4.2115168D 24                                                                  | 1.7617203D 06                                              |
| 480                                            | 490                                            | 4.1639317D 24                                                                  | 1.7059012D 06                                              |
| 490                                            | 500                                            | 4.1126597D 24                                                                  | 1.6508572D 06                                              |
| 500                                            | 510                                            | 4.0582399D 24                                                                  | 1.5967545D 06                                              |
| 510                                            | 520                                            | 4.0011625D 24                                                                  | 1.5437273D 06                                              |
| 520                                            | 530                                            | 3.9418717D 24                                                                  | 1.4918825D 06                                              |
| 530                                            | 540                                            | 3.8807689D 24                                                                  | 1.4413027D 06                                              |
| 540                                            | 550                                            | 3.8182157D 24                                                                  | 1.3920502D 06                                              |
| 550                                            | 560                                            | 3.7545369D 24                                                                  | 1.3441695D 06                                              |
| 560                                            | 570                                            | 3.6900235D 24                                                                  | 1.2976902D 06                                              |
| 570                                            | 580                                            | 3.6249353D 24                                                                  | 1.2526290D 06                                              |
| 580                                            | 590                                            | 3.5595038D 24                                                                  | 1.2089917D 06                                              |
| 590                                            | 600                                            | 3.4939343D 24                                                                  | 1.1667751D 06                                              |
| 600                                            | 610                                            | 3.4284086D 24                                                                  | 1.1259686D 06                                              |
| 610                                            | 620                                            | 3.3630870D 24                                                                  | 1.0865550D 06                                              |
| 620                                            | 630                                            | 3.2981102D 24                                                                  | 1.0485123D 06                                              |
| 630                                            | 640                                            | 3.2336015D 24                                                                  | 1.0118143D 06                                              |
| 640                                            | 650                                            | 3.1696680D 24                                                                  | 9.7643149D 05                                              |
| 650                                            | 660                                            | 3.1064025D 24                                                                  | 9.4233170D 05                                              |
| 660                                            | 670                                            | 3.0438848D 24                                                                  | 9.0948097D 05                                              |
| 670                                            | 680                                            | 2.9821832D 24                                                                  | 8.7784384D 05                                              |
| 680                                            | 690                                            | 2.9213555D 24                                                                  | 8.4738393D 05                                              |
| 690                                            | 700                                            | 2.8614500D 24                                                                  | 8.1806426D 05                                              |
| 700                                            | 710                                            | 2.8025068D 24                                                                  | 7.8984759D 05                                              |
| 710                                            | 720                                            | 2.7445583D 24                                                                  | 7.6269666D 05                                              |
| 720                                            | 730                                            | 2.6876304D 24                                                                  | 7.3657447D 05                                              |
| 730                                            | 740                                            | 2.6317431D 24                                                                  | 7.1144440D 05                                              |
| 740                                            | 750                                            | 2.5769109D 24                                                                  | 6.8727040D 05                                              |
| 750                                            | 760                                            | 2.5231438D 24                                                                  | 6.6401710D 05                                              |
| 760                                            | 770                                            | 2.4704475D 24                                                                  | 6.4164990D 05                                              |
| 770                                            | 780                                            | 2.4188244D 24                                                                  | 6.2013505D 05                                              |
| 780                                            | 790                                            | 2.3682732D 24                                                                  | 5.9943971D 05                                              |
| 790                                            | 800                                            | 2.3187901D 24                                                                  | 5.7953199D 05                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 9000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 2.27036890 24                                                                | 5.60380970 05                                             |
| 810                                    | 820                                    | 2.22300100 24                                                                | 5.41956740 05                                             |
| 820                                    | 830                                    | 2.17667620 24                                                                | 5.24230380 05                                             |
| 830                                    | 840                                    | 2.13138250 24                                                                | 5.07173990 05                                             |
| 840                                    | 850                                    | 2.08710670 24                                                                | 4.90760660 05                                             |
| 850                                    | 860                                    | 2.04383420 24                                                                | 4.74964470 05                                             |
| 860                                    | 870                                    | 2.00154990 24                                                                | 4.59760480 05                                             |
| 870                                    | 880                                    | 1.96023730 24                                                                | 4.45124700 05                                             |
| 880                                    | 890                                    | 1.91987970 24                                                                | 4.31034080 05                                             |
| 890                                    | 900                                    | 1.88045960 24                                                                | 4.17466490 05                                             |
| 900                                    | 910                                    | 1.84195920 24                                                                | 4.04400660 05                                             |
| 910                                    | 920                                    | 1.80436040 24                                                                | 3.91816220 05                                             |
| 920                                    | 930                                    | 1.76764480 24                                                                | 3.79693600 05                                             |
| 930                                    | 940                                    | 1.73179380 24                                                                | 3.68014050 05                                             |
| 940                                    | 950                                    | 1.69678910 24                                                                | 3.56759600 05                                             |
| 950                                    | 960                                    | 1.66261180 24                                                                | 3.45913020 05                                             |
| 960                                    | 970                                    | 1.62924360 24                                                                | 3.35457830 05                                             |
| 970                                    | 980                                    | 1.59666590 24                                                                | 3.25378220 05                                             |
| 980                                    | 990                                    | 1.56486050 24                                                                | 3.15659060 05                                             |
| 990                                    | 1000                                   | 1.53380920 24                                                                | 3.06285850 05                                             |
| 1000                                   | 1010                                   | 1.50349400 24                                                                | 2.97244730 05                                             |
| 1010                                   | 1020                                   | 1.47389730 24                                                                | 2.88522400 05                                             |
| 1020                                   | 1030                                   | 1.44500170 24                                                                | 2.80106160 05                                             |
| 1030                                   | 1040                                   | 1.41678980 24                                                                | 2.71983840 05                                             |
| 1040                                   | 1050                                   | 1.38924490 24                                                                | 2.64143770 05                                             |
| 1050                                   | 1060                                   | 1.36235030 24                                                                | 2.56574820 05                                             |
| 1060                                   | 1070                                   | 1.33608970 24                                                                | 2.49265300 05                                             |
| 1070                                   | 1080                                   | 1.31044720 24                                                                | 2.42207990 05                                             |
| 1080                                   | 1090                                   | 1.28540710 24                                                                | 2.35390110 05                                             |
| 1090                                   | 1100                                   | 1.26095410 24                                                                | 2.28803300 05                                             |
| 1100                                   | 1110                                   | 1.23707330 24                                                                | 2.22438580 05                                             |
| 1110                                   | 1120                                   | 1.21374990 24                                                                | 2.16287370 05                                             |
| 1120                                   | 1130                                   | 1.19096970 24                                                                | 2.10341450 05                                             |
| 1130                                   | 1140                                   | 1.16871860 24                                                                | 2.04592950 05                                             |
| 1140                                   | 1150                                   | 1.14698310 24                                                                | 1.99034320 05                                             |
| 1150                                   | 1160                                   | 1.12574980 24                                                                | 1.93658340 05                                             |
| 1160                                   | 1170                                   | 1.10500570 24                                                                | 1.88458090 05                                             |
| 1170                                   | 1180                                   | 1.08473820 24                                                                | 1.83426940 05                                             |
| 1180                                   | 1190                                   | 1.06493490 24                                                                | 1.78558550 05                                             |
| 1190                                   | 1200                                   | 1.04558380 24                                                                | 1.73846820 05                                             |
| 1200                                   | 1210                                   | 1.02667310 24                                                                | 1.69285930 05                                             |
| 1210                                   | 1220                                   | 1.00819160 24                                                                | 1.64870290 05                                             |
| 1220                                   | 1230                                   | 9.90127930 23                                                                | 1.60594520 05                                             |
| 1230                                   | 1240                                   | 9.72471430 23                                                                | 1.56453500 05                                             |
| 1240                                   | 1250                                   | 9.55211510 23                                                                | 1.52442300 05                                             |
| 1250                                   | 1260                                   | 9.38337930 23                                                                | 1.48556180 05                                             |
| 1260                                   | 1270                                   | 9.21840720 23                                                                | 1.44790620 05                                             |
| 1270                                   | 1280                                   | 9.05710170 23                                                                | 1.41141280 05                                             |
| 1280                                   | 1290                                   | 8.89936840 23                                                                | 1.37603960 05                                             |
| 1290                                   | 1300                                   | 8.74511540 23                                                                | 1.34174680 05                                             |
| 1300                                   | 1310                                   | 8.59425350 23                                                                | 1.30849580 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 9000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 8.44669570 23                                                                | 1.27624980 05                                             |
| 1320                                   | 1330                                   | 8.30235760 23                                                                | 1.24497340 05                                             |
| 1330                                   | 1340                                   | 8.16115700 23                                                                | 1.21463250 05                                             |
| 1340                                   | 1350                                   | 8.02301400 23                                                                | 1.18519440 05                                             |
| 1350                                   | 1360                                   | 7.88785090 23                                                                | 1.15662790 05                                             |
| 1360                                   | 1370                                   | 7.75559210 23                                                                | 1.12890260 05                                             |
| 1370                                   | 1380                                   | 7.62616430 23                                                                | 1.10198970 05                                             |
| 1380                                   | 1390                                   | 7.49949590 23                                                                | 1.07586140 05                                             |
| 1390                                   | 1400                                   | 7.37551760 23                                                                | 1.05049070 05                                             |
| 1400                                   | 1410                                   | 7.25416180 23                                                                | 1.02585210 05                                             |
| 1410                                   | 1420                                   | 7.13536300 23                                                                | 1.00192080 05                                             |
| 1420                                   | 1430                                   | 7.01905720 23                                                                | 9.78673030 04                                             |
| 1430                                   | 1440                                   | 6.90518240 23                                                                | 9.56085840 04                                             |
| 1440                                   | 1450                                   | 6.79367830 23                                                                | 9.34137250 04                                             |
| 1450                                   | 1460                                   | 6.68448620 23                                                                | 9.12806090 04                                             |
| 1460                                   | 1470                                   | 6.57754910 23                                                                | 8.92071970 04                                             |
| 1470                                   | 1480                                   | 6.47281150 23                                                                | 8.71915280 04                                             |
| 1480                                   | 1490                                   | 6.37021940 23                                                                | 8.52317130 04                                             |
| 1490                                   | 1500                                   | 6.26972040 23                                                                | 8.33259350 04                                             |
| 1500                                   | 1510                                   | 6.17126340 23                                                                | 8.14724430 04                                             |
| 1510                                   | 1520                                   | 6.07479890 23                                                                | 7.96695500 04                                             |
| 1520                                   | 1530                                   | 5.98027870 23                                                                | 7.79156330 04                                             |
| 1530                                   | 1540                                   | 5.88765570 23                                                                | 7.62091270 04                                             |
| 1540                                   | 1550                                   | 5.79688430 23                                                                | 7.45485240 04                                             |
| 1550                                   | 1560                                   | 5.70792010 23                                                                | 7.29323710 04                                             |
| 1560                                   | 1570                                   | 5.62071990 23                                                                | 7.13592680 04                                             |
| 1570                                   | 1580                                   | 5.53524170 23                                                                | 6.98278650 04                                             |
| 1580                                   | 1590                                   | 5.45144460 23                                                                | 6.83368590 04                                             |
| 1590                                   | 1600                                   | 5.36928890 23                                                                | 6.68849950 04                                             |
| 1600                                   | 1610                                   | 5.28873580 23                                                                | 6.54710630 04                                             |
| 1610                                   | 1620                                   | 5.20974760 23                                                                | 6.40938950 04                                             |
| 1620                                   | 1630                                   | 5.13228770 23                                                                | 6.27523630 04                                             |
| 1630                                   | 1640                                   | 5.05632050 23                                                                | 6.14453800 04                                             |
| 1640                                   | 1650                                   | 4.98181110 23                                                                | 6.01718980 04                                             |
| 1650                                   | 1660                                   | 4.90872590 23                                                                | 5.89309020 04                                             |
| 1660                                   | 1670                                   | 4.83703190 23                                                                | 5.77214150 04                                             |
| 1670                                   | 1680                                   | 4.76669720 23                                                                | 5.65424930 04                                             |
| 1680                                   | 1690                                   | 4.69769050 23                                                                | 5.53932250 04                                             |
| 1690                                   | 1700                                   | 4.62998140 23                                                                | 5.42727290 04                                             |
| 1700                                   | 1710                                   | 4.56354050 23                                                                | 5.31801540 04                                             |
| 1710                                   | 1720                                   | 4.49833900 23                                                                | 5.21146800 04                                             |
| 1720                                   | 1730                                   | 4.43434880 23                                                                | 5.10755120 04                                             |
| 1730                                   | 1740                                   | 4.37154270 23                                                                | 5.00618820 04                                             |
| 1740                                   | 1750                                   | 4.30989400 23                                                                | 4.90730490 04                                             |
| 1750                                   | 1760                                   | 4.24937690 23                                                                | 4.81082960 04                                             |
| 1760                                   | 1770                                   | 4.18996610 23                                                                | 4.71669290 04                                             |
| 1770                                   | 1780                                   | 4.13163720 23                                                                | 4.62482790 04                                             |
| 1780                                   | 1790                                   | 4.07436600 23                                                                | 4.53516970 04                                             |
| 1790                                   | 1800                                   | 4.01812940 23                                                                | 4.44765550 04                                             |
| 1800                                   | 1810                                   | 3.96290460 23                                                                | 4.36222480 04                                             |

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$T = 9000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 3.9086694D 23                                                                | 4.2788189D 04                                             |
| 1820                                   | 1830                                   | 3.8554022D 23                                                                | 4.1973809D 04                                             |
| 1830                                   | 1840                                   | 3.8030820D 23                                                                | 4.1178559D 04                                             |
| 1840                                   | 1850                                   | 3.7516884D 23                                                                | 4.0401907D 04                                             |
| 1850                                   | 1860                                   | 3.7012012D 23                                                                | 3.9643339D 04                                             |
| 1860                                   | 1870                                   | 3.6516010D 23                                                                | 3.8902355D 04                                             |
| 1870                                   | 1880                                   | 3.6028689D 23                                                                | 3.8178473D 04                                             |
| 1880                                   | 1890                                   | 3.5549862D 23                                                                | 3.7471226D 04                                             |
| 1890                                   | 1900                                   | 3.5079349D 23                                                                | 3.6780160D 04                                             |
| 1900                                   | 1910                                   | 3.4616975D 23                                                                | 3.6104838D 04                                             |
| 1910                                   | 1920                                   | 3.4162566D 23                                                                | 3.5444833D 04                                             |
| 1920                                   | 1930                                   | 3.3715955D 23                                                                | 3.4799735D 04                                             |
| 1930                                   | 1940                                   | 3.3276980D 23                                                                | 3.4169145D 04                                             |
| 1940                                   | 1950                                   | 3.2845480D 23                                                                | 3.3552674D 04                                             |
| 1950                                   | 1960                                   | 3.2421300D 23                                                                | 3.2949950D 04                                             |
| 1960                                   | 1970                                   | 3.2004287D 23                                                                | 3.2360608D 04                                             |
| 1970                                   | 1980                                   | 3.1594295D 23                                                                | 3.1784297D 04                                             |
| 1980                                   | 1990                                   | 3.1191177D 23                                                                | 3.1220674D 04                                             |
| 1990                                   | 2000                                   | 3.0794794D 23                                                                | 3.0669408D 04                                             |
| 2000                                   | 2010                                   | 3.0405008D 23                                                                | 3.0130178D 04                                             |

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Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 9000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 2.87534020 24                                                                | 2.78875120 05                                             |
| 2100                                   | 2200                                   | 2.54375180 24                                                                | 2.35225590 05                                             |
| 2200                                   | 2300                                   | 2.26076860 24                                                                | 1.99755600 05                                             |
| 2300                                   | 2400                                   | 2.01789320 24                                                                | 1.70700760 05                                             |
| 2400                                   | 2500                                   | 1.80833000 24                                                                | 1.46723190 05                                             |
| 2500                                   | 2600                                   | 1.62660540 24                                                                | 1.26798230 05                                             |
| 2600                                   | 2700                                   | 1.46828100 24                                                                | 1.10133670 05                                             |
| 2700                                   | 2800                                   | 1.32973410 24                                                                | 9.61116530 04                                             |
| 2800                                   | 2900                                   | 1.20798960 24                                                                | 8.42462720 04                                             |
| 2900                                   | 3000                                   | 1.10059050 24                                                                | 7.41524640 04                                             |
| 3000                                   | 3200                                   | 1.92649650 24                                                                | 1.23633130 05                                             |
| 3200                                   | 3400                                   | 1.62399160 24                                                                | 9.78891790 04                                             |
| 3400                                   | 3600                                   | 1.38145280 24                                                                | 7.85017870 04                                             |
| 3600                                   | 3800                                   | 1.18477300 24                                                                | 6.36795200 04                                             |
| 3800                                   | 4000                                   | 1.02363540 24                                                                | 5.21925350 04                                             |
| 4000                                   | 4200                                   | 8.90379870 23                                                                | 4.31803240 04                                             |
| 4200                                   | 4400                                   | 7.79240470 23                                                                | 3.60303580 04                                             |
| 4400                                   | 4600                                   | 6.85821780 23                                                                | 3.02997510 04                                             |
| 4600                                   | 4800                                   | 6.06734330 23                                                                | 2.56636760 04                                             |
| 4800                                   | 5000                                   | 5.39336450 23                                                                | 2.18807540 04                                             |
| 5000                                   | 5500                                   | 1.11256210 24                                                                | 4.22273880 04                                             |
| 5500                                   | 6000                                   | 8.58121790 23                                                                | 2.97238000 04                                             |
| 6000                                   | 6500                                   | 6.75677370 23                                                                | 2.15240110 04                                             |
| 6500                                   | 7000                                   | 5.41474510 23                                                                | 1.59665920 04                                             |
| 7000                                   | 7500                                   | 4.40572260 23                                                                | 1.20924980 04                                             |
| 7500                                   | 8000                                   | 3.63253780 23                                                                | 9.32530160 03                                             |
| 8000                                   | 8500                                   | 3.03014350 23                                                                | 7.30626820 03                                             |
| 8500                                   | 9000                                   | 2.55388130 23                                                                | 5.80526590 03                                             |
| 9000                                   | 9500                                   | 2.17240040 23                                                                | 4.67067430 03                                             |
| 9500                                   | 10000                                  | 1.86325300 23                                                                | 3.80021130 03                                             |
| 10000                                  | 11000                                  | 3.01084450 23                                                                | 5.71419670 03                                             |
| 11000                                  | 12000                                  | 2.30570390 23                                                                | 3.99345970 03                                             |
| 12000                                  | 13000                                  | 1.80468020 23                                                                | 2.87454980 03                                             |
| 13000                                  | 14000                                  | 1.43893860 23                                                                | 2.12157770 03                                             |
| 14000                                  | 15000                                  | 1.16572780 23                                                                | 1.59983810 03                                             |
| 15000                                  | 16000                                  | 9.57537950 22                                                                | 1.22909920 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 9500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 300                                            | 310                                            | 4.8621095D 24                                                                  | 3.1673249D 06                                              |
| 310                                            | 320                                            | 5.0092329D 24                                                                  | 3.1596136D 06                                              |
| 320                                            | 330                                            | 5.1322252D 24                                                                  | 3.1376190D 06                                              |
| 330                                            | 340                                            | 5.2323801D 24                                                                  | 3.1033879D 06                                              |
| 340                                            | 350                                            | 5.3111496D 24                                                                  | 3.0588210D 06                                              |
| 350                                            | 360                                            | 5.3700775D 24                                                                  | 3.0056560D 06                                              |
| 360                                            | 370                                            | 5.4107466D 24                                                                  | 2.9454617D 06                                              |
| 370                                            | 380                                            | 5.4347384D 24                                                                  | 2.8796387D 06                                              |
| 380                                            | 390                                            | 5.4436024D 24                                                                  | 2.8094256D 06                                              |
| 390                                            | 400                                            | 5.4388329D 24                                                                  | 2.7359077D 06                                              |
| 400                                            | 410                                            | 5.4218540D 24                                                                  | 2.6600288D 06                                              |
| 410                                            | 420                                            | 5.3940088D 24                                                                  | 2.5826029D 06                                              |
| 420                                            | 430                                            | 5.3565535D 24                                                                  | 2.5043266D 06                                              |
| 430                                            | 440                                            | 5.3106545D 24                                                                  | 2.4257915D 06                                              |
| 440                                            | 450                                            | 5.257388D 24                                                                   | 2.3474957D 06                                              |
| 450                                            | 460                                            | 5.19774D 24                                                                    | 2.2698549D 06                                              |
| 460                                            | 470                                            | 5.1326177D 24                                                                  | 2.1932125D 06                                              |
| 470                                            | 480                                            | 5.0628364D 24                                                                  | 2.1178485D 06                                              |
| 480                                            | 490                                            | 4.9891409D 24                                                                  | 2.0439885D 06                                              |
| 490                                            | 500                                            | 4.9122016D 24                                                                  | 1.9718105D 06                                              |
| 500                                            | 510                                            | 4.8326218D 24                                                                  | 1.9014519D 06                                              |
| 510                                            | 520                                            | 4.7509418D 24                                                                  | 1.8330153D 06                                              |
| 520                                            | 530                                            | 4.6676448D 24                                                                  | 1.7665738D 06                                              |
| 530                                            | 540                                            | 4.5831609D 24                                                                  | 1.7021752D 06                                              |
| 540                                            | 550                                            | 4.4978719D 24                                                                  | 1.6398463D 06                                              |
| 550                                            | 560                                            | 4.4121158D 24                                                                  | 1.5795963D 06                                              |
| 560                                            | 570                                            | 4.3261906D 24                                                                  | 1.5214196D 06                                              |
| 570                                            | 580                                            | 4.2403581D 24                                                                  | 1.4652985D 06                                              |
| 580                                            | 590                                            | 4.1548474D 24                                                                  | 1.4112054D 06                                              |
| 590                                            | 600                                            | 4.0698581D 24                                                                  | 1.3591048D 06                                              |
| 600                                            | 610                                            | 3.9855634D 24                                                                  | 1.3089546D 06                                              |
| 610                                            | 620                                            | 3.9021127D 24                                                                  | 1.2607081D 06                                              |
| 620                                            | 630                                            | 3.8196337D 24                                                                  | 1.2143144D 06                                              |
| 630                                            | 640                                            | 3.7382355D 24                                                                  | 1.1697202D 06                                              |
| 640                                            | 650                                            | 3.6580097D 24                                                                  | 1.1268700D 06                                              |
| 650                                            | 660                                            | 3.5790330D 24                                                                  | 1.0857071D 06                                              |
| 660                                            | 670                                            | 3.5013685D 24                                                                  | 1.0461744D 06                                              |
| 670                                            | 680                                            | 3.4250670D 24                                                                  | 1.0082143D 06                                              |
| 680                                            | 690                                            | 3.3501690D 24                                                                  | 9.7176961D 05                                              |
| 690                                            | 700                                            | 3.2767054D 24                                                                  | 9.3678386D 05                                              |
| 700                                            | 710                                            | 3.2046988D 24                                                                  | 9.0320129D 05                                              |
| 710                                            | 720                                            | 3.1341644D 24                                                                  | 8.7096727D 05                                              |
| 720                                            | 730                                            | 3.0651110D 24                                                                  | 8.4002840D 05                                              |
| 730                                            | 740                                            | 2.9975419D 24                                                                  | 8.1033267D 05                                              |
| 740                                            | 750                                            | 2.9314551D 24                                                                  | 7.8182956D 05                                              |
| 750                                            | 760                                            | 2.8668448D 24                                                                  | 7.5447007D 05                                              |
| 760                                            | 770                                            | 2.8037011D 24                                                                  | 7.2820632D 05                                              |
| 770                                            | 780                                            | 2.7420109D 24                                                                  | 7.0299405D 05                                              |
| 780                                            | 790                                            | 2.6817587D 24                                                                  | 6.7878762D 05                                              |
| 790                                            | 800                                            | 2.6229263D 24                                                                  | 6.5554504D 05                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 9500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 2.56549370 24                                                                | 6.33225440 05                                             |
| 810                                    | 820                                    | 2.50943910 24                                                                | 6.11789540 05                                             |
| 820                                    | 830                                    | 2.45473940 24                                                                | 5.91199650 05                                             |
| 830                                    | 840                                    | 2.40137030 24                                                                | 5.71419600 05                                             |
| 840                                    | 850                                    | 2.34930690 24                                                                | 5.52414720 05                                             |
| 850                                    | 860                                    | 2.29852320 24                                                                | 5.34151820 05                                             |
| 860                                    | 870                                    | 2.24899280 24                                                                | 5.16599110 05                                             |
| 870                                    | 880                                    | 2.20068900 24                                                                | 4.99726150 05                                             |
| 880                                    | 890                                    | 2.15358490 24                                                                | 4.83503850 05                                             |
| 890                                    | 900                                    | 2.10765330 24                                                                | 4.67904380 05                                             |
| 900                                    | 910                                    | 2.06286700 24                                                                | 4.52901130 05                                             |
| 910                                    | 920                                    | 2.01919910 24                                                                | 4.38468680 05                                             |
| 920                                    | 930                                    | 1.97662250 24                                                                | 4.24582730 05                                             |
| 930                                    | 940                                    | 1.93511070 24                                                                | 4.11220060 05                                             |
| 940                                    | 950                                    | 1.89463710 24                                                                | 3.98358520 05                                             |
| 950                                    | 960                                    | 1.85517560 24                                                                | 3.85976910 05                                             |
| 960                                    | 970                                    | 1.81670040 24                                                                | 3.74055030 05                                             |
| 970                                    | 980                                    | 1.77918630 24                                                                | 3.62573540 05                                             |
| 980                                    | 990                                    | 1.74260830 24                                                                | 3.51514020 05                                             |
| 990                                    | 1000                                   | 1.70694190 24                                                                | 3.40858850 05                                             |
| 1000                                   | 1010                                   | 1.67216310 24                                                                | 3.30591210 05                                             |
| 1010                                   | 1020                                   | 1.63824830 24                                                                | 3.20695040 05                                             |
| 1020                                   | 1030                                   | 1.60517460 24                                                                | 3.11155000 05                                             |
| 1030                                   | 1040                                   | 1.57291930 24                                                                | 3.01956460 05                                             |
| 1040                                   | 1050                                   | 1.54146060 24                                                                | 2.93085410 05                                             |
| 1050                                   | 1060                                   | 1.51077690 24                                                                | 2.84528500 05                                             |
| 1060                                   | 1070                                   | 1.48084730 24                                                                | 2.76272970 05                                             |
| 1070                                   | 1080                                   | 1.45165110 24                                                                | 2.68306610 05                                             |
| 1080                                   | 1090                                   | 1.42316860 24                                                                | 2.60617790 05                                             |
| 1090                                   | 1100                                   | 1.39538030 24                                                                | 2.53195360 05                                             |
| 1100                                   | 1110                                   | 1.36826720 24                                                                | 2.46028700 05                                             |
| 1110                                   | 1120                                   | 1.34181090 24                                                                | 2.39107630 05                                             |
| 1120                                   | 1130                                   | 1.31599350 24                                                                | 2.32422440 05                                             |
| 1130                                   | 1140                                   | 1.29079740 24                                                                | 2.25963830 05                                             |
| 1140                                   | 1150                                   | 1.26620570 24                                                                | 2.19722920 05                                             |
| 1150                                   | 1160                                   | 1.24220190 24                                                                | 2.13691210 05                                             |
| 1160                                   | 1170                                   | 1.21877000 24                                                                | 2.07860580 05                                             |
| 1170                                   | 1180                                   | 1.19589420 24                                                                | 2.02223250 05                                             |
| 1180                                   | 1190                                   | 1.17355950 24                                                                | 1.96771790 05                                             |
| 1190                                   | 1200                                   | 1.15175110 24                                                                | 1.91499070 05                                             |
| 1200                                   | 1210                                   | 1.13045460 24                                                                | 1.86398290 05                                             |
| 1210                                   | 1220                                   | 1.10965630 24                                                                | 1.81462930 05                                             |
| 1220                                   | 1230                                   | 1.08934240 24                                                                | 1.76686740 05                                             |
| 1230                                   | 1240                                   | 1.06950010 24                                                                | 1.72063740 05                                             |
| 1240                                   | 1250                                   | 1.05011640 24                                                                | 1.67588210 05                                             |
| 1250                                   | 1260                                   | 1.03117900 24                                                                | 1.63254670 05                                             |
| 1260                                   | 1270                                   | 1.01267590 24                                                                | 1.59057860 05                                             |
| 1270                                   | 1280                                   | 9.94595400 23                                                                | 1.54992740 05                                             |
| 1280                                   | 1290                                   | 9.76926240 23                                                                | 1.51054490 05                                             |
| 1290                                   | 1300                                   | 9.59657390 23                                                                | 1.47238480 05                                             |
| 1300                                   | 1310                                   | 9.42778170 23                                                                | 1.43540280 05                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 9500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 9.26278220 23                                                                | 1.39955640 05                                             |
| 1320                                   | 1330                                   | 9.10147480 23                                                                | 1.36480470 05                                             |
| 1330                                   | 1340                                   | 8.94376190 23                                                                | 1.33110860 05                                             |
| 1340                                   | 1350                                   | 8.78954870 23                                                                | 1.29843050 05                                             |
| 1350                                   | 1360                                   | 8.63874310 23                                                                | 1.26673450 05                                             |
| 1360                                   | 1370                                   | 8.49125580 23                                                                | 1.23598590 05                                             |
| 1370                                   | 1380                                   | 8.34700000 23                                                                | 1.20615160 05                                             |
| 1380                                   | 1390                                   | 8.20589160 23                                                                | 1.17719960 05                                             |
| 1390                                   | 1400                                   | 8.06784880 23                                                                | 1.14909930 05                                             |
| 1400                                   | 1410                                   | 7.93279220 23                                                                | 1.12182130 05                                             |
| 1410                                   | 1420                                   | 7.80064470 23                                                                | 1.09533740 05                                             |
| 1420                                   | 1430                                   | 7.67133160 23                                                                | 1.06962040 05                                             |
| 1430                                   | 1440                                   | 7.54478010 23                                                                | 1.04464420 05                                             |
| 1440                                   | 1450                                   | 7.42091970 23                                                                | 1.02038370 05                                             |
| 1450                                   | 1460                                   | 7.29968180 23                                                                | 9.96814830 04                                             |
| 1460                                   | 1470                                   | 7.18100000 23                                                                | 9.73914390 04                                             |
| 1470                                   | 1480                                   | 7.06480950 23                                                                | 9.51660070 04                                             |
| 1480                                   | 1490                                   | 6.95104760 23                                                                | 9.30030420 04                                             |
| 1490                                   | 1500                                   | 6.83965330 23                                                                | 9.09004790 04                                             |
| 1500                                   | 1510                                   | 6.73056740 23                                                                | 8.88563330 04                                             |
| 1510                                   | 1520                                   | 6.62373220 23                                                                | 8.68686920 04                                             |
| 1520                                   | 1530                                   | 6.51909200 23                                                                | 8.49357160 04                                             |
| 1530                                   | 1540                                   | 6.41659230 23                                                                | 8.30556320 04                                             |
| 1540                                   | 1550                                   | 6.31618040 23                                                                | 8.12267360 04                                             |
| 1550                                   | 1560                                   | 6.21780500 23                                                                | 7.94473840 04                                             |
| 1560                                   | 1570                                   | 6.12141620 23                                                                | 7.77159930 04                                             |
| 1570                                   | 1580                                   | 6.02696550 23                                                                | 7.60310390 04                                             |
| 1580                                   | 1590                                   | 5.93440580 23                                                                | 7.43910520 04                                             |
| 1590                                   | 1600                                   | 5.84369150 23                                                                | 7.27946160 04                                             |
| 1600                                   | 1610                                   | 5.75477790 23                                                                | 7.12403650 04                                             |
| 1610                                   | 1620                                   | 5.66762170 23                                                                | 6.97269850 04                                             |
| 1620                                   | 1630                                   | 5.58218100 23                                                                | 6.82532050 04                                             |
| 1630                                   | 1640                                   | 5.49841470 23                                                                | 6.68178020 04                                             |
| 1640                                   | 1650                                   | 5.41628310 23                                                                | 6.54195950 04                                             |
| 1650                                   | 1660                                   | 5.33574750 23                                                                | 6.40574460 04                                             |
| 1660                                   | 1670                                   | 5.25677030 23                                                                | 6.27302560 04                                             |
| 1670                                   | 1680                                   | 5.17931480 23                                                                | 6.14369640 04                                             |
| 1680                                   | 1690                                   | 5.10334550 23                                                                | 6.01765470 04                                             |
| 1690                                   | 1700                                   | 5.02882760 23                                                                | 5.89480160 04                                             |
| 1700                                   | 1710                                   | 4.95572750 23                                                                | 5.77504180 04                                             |
| 1710                                   | 1720                                   | 4.88401230 23                                                                | 5.65828320 04                                             |
| 1720                                   | 1730                                   | 4.81365010 23                                                                | 5.54443670 04                                             |
| 1730                                   | 1740                                   | 4.74460990 23                                                                | 5.43341650 04                                             |
| 1740                                   | 1750                                   | 4.67686140 23                                                                | 5.32513950 04                                             |
| 1750                                   | 1760                                   | 4.61037510 23                                                                | 5.21952550 04                                             |
| 1760                                   | 1770                                   | 4.54512250 23                                                                | 5.11649690 04                                             |
| 1770                                   | 1780                                   | 4.48107560 23                                                                | 5.01597890 04                                             |
| 1780                                   | 1790                                   | 4.41820710 23                                                                | 4.91789900 04                                             |
| 1790                                   | 1800                                   | 4.35649030 23                                                                | 4.82218710 04                                             |
| 1800                                   | 1810                                   | 4.29590080 23                                                                | 4.72877560 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 9500^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 4.23641200 23                                                                  | 4.63759890 04                                              |
| 1820                                           | 1830                                           | 4.17799990 23                                                                  | 4.54859380 04                                              |
| 1830                                           | 1840                                           | 4.12064090 23                                                                  | 4.46169880 04                                              |
| 1840                                           | 1850                                           | 4.06431160 23                                                                  | 4.37685480 04                                              |
| 1850                                           | 1860                                           | 4.00898950 23                                                                  | 4.29400440 04                                              |
| 1860                                           | 1870                                           | 3.95465260 23                                                                  | 4.21309200 04                                              |
| 1870                                           | 1880                                           | 3.90127940 23                                                                  | 4.13406390 04                                              |
| 1880                                           | 1890                                           | 3.84884900 23                                                                  | 4.05686810 04                                              |
| 1890                                           | 1900                                           | 3.79734100 23                                                                  | 3.98145410 04                                              |
| 1900                                           | 1910                                           | 3.74673560 23                                                                  | 3.90777330 04                                              |
| 1910                                           | 1920                                           | 3.69701340 23                                                                  | 3.83577840 04                                              |
| 1920                                           | 1930                                           | 3.64815550 23                                                                  | 3.76542360 04                                              |
| 1930                                           | 1940                                           | 3.60014350 23                                                                  | 3.69666460 04                                              |
| 1940                                           | 1950                                           | 3.55295960 23                                                                  | 3.62945840 04                                              |
| 1950                                           | 1960                                           | 3.50658610 23                                                                  | 3.56376350 04                                              |
| 1960                                           | 1970                                           | 3.46100600 23                                                                  | 3.49953940 04                                              |
| 1970                                           | 1980                                           | 3.41620270 23                                                                  | 3.43674720 04                                              |
| 1980                                           | 1990                                           | 3.37215990 23                                                                  | 3.37534900 04                                              |
| 1990                                           | 2000                                           | 3.32886180 23                                                                  | 3.31530790 04                                              |
| 2000                                           | 2010                                           | 3.28629300 23                                                                  | 3.25658850 04                                              |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

T = 9500°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>W $m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 2000                                   | 2100                                   | 3.10604810 24                                           | 3.01252670 05                               |
| 2100                                   | 2200                                   | 2.74458950 24                                           | 2.53798540 05                               |
| 2200                                   | 2300                                   | 2.43664640 24                                           | 2.15296520 05                               |
| 2300                                   | 2400                                   | 2.17275850 24                                           | 1.83801960 05                               |
| 2400                                   | 2500                                   | 1.94538380 24                                           | 1.57843830 05                               |
| 2500                                   | 2600                                   | 1.74846480 24                                           | 1.36297840 05                               |
| 2600                                   | 2700                                   | 1.57710160 24                                           | 1.18296420 05                               |
| 2700                                   | 2800                                   | 1.42730410 24                                           | 1.03164110 05                               |
| 2800                                   | 2900                                   | 1.29580220 24                                           | 9.03705560 04                               |
| 2900                                   | 3000                                   | 1.17999980 24                                           | 7.94960650 04                               |
| 3000                                   | 3200                                   | 2.06368460 24                                           | 1.32437920 05                               |
| 3200                                   | 3400                                   | 1.73797120 24                                           | 1.04759990 05                               |
| 3400                                   | 3600                                   | 1.47716580 24                                           | 8.39410460 04                               |
| 3600                                   | 3800                                   | 1.26591560 24                                           | 6.80410110 04                               |
| 3800                                   | 4000                                   | 1.09301590 24                                           | 5.57302160 04                               |
| 4000                                   | 4200                                   | 9.50162390 23                                           | 4.60796730 04                               |
| 4200                                   | 4400                                   | 8.31114210 23                                           | 3.84289610 04                               |
| 4400                                   | 4600                                   | 7.31120590 23                                           | 3.23011180 04                               |
| 4600                                   | 4800                                   | 6.46522680 23                                           | 2.73466860 04                               |
| 4800                                   | 5000                                   | 5.74472040 23                                           | 2.33062270 04                               |
| 5000                                   | 5500                                   | 1.18431840 24                                           | 4.49512040 04                               |
| 5500                                   | 6000                                   | 9.12765580 23                                           | 3.16167220 04                               |
| 6000                                   | 6500                                   | 7.18243350 23                                           | 2.28800580 04                               |
| 6500                                   | 7000                                   | 5.75274400 23                                           | 1.69633100 04                               |
| 7000                                   | 7500                                   | 4.67856480 23                                           | 1.28414070 04                               |
| 7500                                   | 8000                                   | 3.85594690 23                                           | 9.89884820 03                               |
| 8000                                   | 8500                                   | 3.21537300 23                                           | 7.75290550 03                               |
| 8500                                   | 9000                                   | 2.70915680 23                                           | 6.15823340 03                               |
| 9000                                   | 9500                                   | 2.30384660 23                                           | 4.95329020 03                               |
| 9500                                   | 10000                                  | 1.97550620 23                                           | 4.02916210 03                               |
| 10000                                  | 11000                                  | 3.19122870 23                                           | 6.05656200 03                               |
| 11000                                  | 12000                                  | 2.44294320 23                                           | 4.23116710 03                               |
| 12000                                  | 13000                                  | 1.91150980 23                                           | 3.04471710 03                               |
| 13000                                  | 14000                                  | 1.52372050 23                                           | 2.24658380 03                               |
| 14000                                  | 15000                                  | 1.23413560 23                                           | 1.69372260 03                               |
| 15000                                  | 16000                                  | 1.01353150 23                                           | 1.30097390 03                               |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 10000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 6.2447337D 24                                                                | 4.0680957D 06                                             |
| 310                                    | 320                                    | 6.3848499D 24                                                                | 4.0273734D 06                                             |
| 320                                    | 330                                    | 6.4951821D 24                                                                | 3.9709417D 06                                             |
| 330                                    | 340                                    | 6.5779070D 24                                                                | 3.9014989D 06                                             |
| 340                                    | 350                                    | 6.6352815D 24                                                                | 3.8214769D 06                                             |
| 350                                    | 360                                    | 6.6695742D 24                                                                | 3.7330400D 06                                             |
| 360                                    | 370                                    | 6.6830126D 24                                                                | 3.6380929D 06                                             |
| 370                                    | 380                                    | 6.6777459D 24                                                                | 3.5382958D 06                                             |
| 380                                    | 390                                    | 6.6558188D 24                                                                | 3.4350821D 06                                             |
| 390                                    | 400                                    | 6.6191544D 24                                                                | 3.3296791D 06                                             |
| 400                                    | 410                                    | 6.5695447D 24                                                                | 3.2231285D 06                                             |
| 410                                    | 420                                    | 6.5086463D 24                                                                | 3.1163067D 06                                             |
| 420                                    | 430                                    | 6.4379802D 24                                                                | 3.0099441D 06                                             |
| 430                                    | 440                                    | 6.3589346D 24                                                                | 2.9046434D 06                                             |
| 440                                    | 450                                    | 6.2727702D 24                                                                | 2.8008960D 06                                             |
| 450                                    | 460                                    | 6.1806260D 24                                                                | 2.6990971D 06                                             |
| 460                                    | 470                                    | 6.0835271D 24                                                                | 2.5995591D 06                                             |
| 470                                    | 480                                    | 5.9823924D 24                                                                | 2.5025236D 06                                             |
| 480                                    | 490                                    | 5.8780422D 24                                                                | 2.4081721D 06                                             |
| 490                                    | 500                                    | 5.7712064D 24                                                                | 2.3166349D 06                                             |
| 500                                    | 510                                    | 5.6625323D 24                                                                | 2.2279996D 06                                             |
| 510                                    | 520                                    | 5.5525915D 24                                                                | 2.1423177D 06                                             |
| 520                                    | 530                                    | 5.4418872D 24                                                                | 2.0596109D 06                                             |
| 530                                    | 540                                    | 5.3308609D 24                                                                | 1.9798763D 06                                             |
| 540                                    | 550                                    | 5.2198978D 24                                                                | 1.9030909D 06                                             |
| 550                                    | 560                                    | 5.1093334D 24                                                                | 1.8292154D 06                                             |
| 560                                    | 570                                    | 4.9994578D 24                                                                | 1.7581972D 06                                             |
| 570                                    | 580                                    | 4.8905208D 24                                                                | 1.6899736D 06                                             |
| 580                                    | 590                                    | 4.7827364D 24                                                                | 1.6244740D 06                                             |
| 590                                    | 600                                    | 4.6762864D 24                                                                | 1.5616218D 06                                             |
| 600                                    | 610                                    | 4.5713239D 24                                                                | 1.5013360D 06                                             |
| 610                                    | 620                                    | 4.4679768D 24                                                                | 1.4435327D 06                                             |
| 620                                    | 630                                    | 4.3663505D 24                                                                | 1.3881262D 06                                             |
| 630                                    | 640                                    | 4.2665307D 24                                                                | 1.3350302D 06                                             |
| 640                                    | 650                                    | 4.1685853D 24                                                                | 1.2841581D 06                                             |
| 650                                    | 660                                    | 4.0725671D 24                                                                | 1.2354240D 06                                             |
| 660                                    | 670                                    | 3.9785151D 24                                                                | 1.1887432D 06                                             |
| 670                                    | 680                                    | 3.8864566D 24                                                                | 1.1440324D 06                                             |
| 680                                    | 690                                    | 3.7964084D 24                                                                | 1.1012102D 06                                             |
| 690                                    | 700                                    | 3.7083783D 24                                                                | 1.0601973D 06                                             |
| 700                                    | 710                                    | 3.6223663D 24                                                                | 1.0209168D 06                                             |
| 710                                    | 720                                    | 3.5383656D 24                                                                | 9.8329396D 05                                             |
| 720                                    | 730                                    | 3.4563635D 24                                                                | 9.4725684D 05                                             |
| 730                                    | 740                                    | 3.3763425D 24                                                                | 9.1273590D 05                                             |
| 740                                    | 750                                    | 3.2982804D 24                                                                | 8.7966424D 05                                             |
| 750                                    | 760                                    | 3.2221519D 24                                                                | 8.4797753D 05                                             |
| 760                                    | 770                                    | 3.1479282D 24                                                                | 8.1761404D 05                                             |
| 770                                    | 780                                    | 3.0755784D 24                                                                | 7.8851457D 05                                             |
| 780                                    | 790                                    | 3.0050691D 24                                                                | 7.6062242D 05                                             |
| 790                                    | 800                                    | 2.9363657D 24                                                                | 7.3388331D 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 10000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 2.86943190 24                                                                | 7.08245360 05                                             |
| 810                                    | 820                                    | 2.80423060 24                                                                | 6.83658950 05                                             |
| 820                                    | 830                                    | 2.74072380 24                                                                | 6.60076730 05                                             |
| 830                                    | 840                                    | 2.67887310 24                                                                | 6.37453460 05                                             |
| 840                                    | 850                                    | 2.61863980 24                                                                | 6.15746000 05                                             |
| 850                                    | 860                                    | 2.55998500 24                                                                | 5.94913170 05                                             |
| 860                                    | 870                                    | 2.50286990 24                                                                | 5.74915730 05                                             |
| 870                                    | 880                                    | 2.44725590 24                                                                | 5.55716250 05                                             |
| 880                                    | 890                                    | 2.39310460 24                                                                | 5.37279070 05                                             |
| 890                                    | 900                                    | 2.34037790 24                                                                | 5.19570190 05                                             |
| 900                                    | 910                                    | 2.28903840 24                                                                | 5.02557230 05                                             |
| 910                                    | 920                                    | 2.23904890 24                                                                | 4.86209330 05                                             |
| 920                                    | 930                                    | 2.19037310 24                                                                | 4.70497090 05                                             |
| 930                                    | 940                                    | 2.14297520 24                                                                | 4.55392510 05                                             |
| 940                                    | 950                                    | 2.09682000 24                                                                | 4.40868910 05                                             |
| 950                                    | 960                                    | 2.05187310 24                                                                | 4.26900880 05                                             |
| 960                                    | 970                                    | 2.00810090 24                                                                | 4.13464210 05                                             |
| 970                                    | 980                                    | 1.96547030 24                                                                | 4.00535840 05                                             |
| 980                                    | 990                                    | 1.92394920 24                                                                | 3.88093790 05                                             |
| 990                                    | 1000                                   | 1.88350630 24                                                                | 3.76117130 05                                             |
| 1000                                   | 1010                                   | 1.84411090 24                                                                | 3.64585920 05                                             |
| 1010                                   | 1020                                   | 1.80573300 24                                                                | 3.53481150 05                                             |
| 1020                                   | 1030                                   | 1.76834380 24                                                                | 3.42784680 05                                             |
| 1030                                   | 1040                                   | 1.73191480 24                                                                | 3.32479270 05                                             |
| 1040                                   | 1050                                   | 1.69641860 24                                                                | 3.22548440 05                                             |
| 1050                                   | 1060                                   | 1.66182830 24                                                                | 3.12976510 05                                             |
| 1060                                   | 1070                                   | 1.62811790 24                                                                | 3.03748490 05                                             |
| 1070                                   | 1080                                   | 1.59526210 24                                                                | 2.94850130 05                                             |
| 1080                                   | 1090                                   | 1.56323640 24                                                                | 2.86267800 05                                             |
| 1090                                   | 1100                                   | 1.53201690 24                                                                | 2.77988520 05                                             |
| 1100                                   | 1110                                   | 1.50158040 24                                                                | 2.69999900 05                                             |
| 1110                                   | 1120                                   | 1.47190450 24                                                                | 2.62290090 05                                             |
| 1120                                   | 1130                                   | 1.44296720 24                                                                | 2.54847820 05                                             |
| 1130                                   | 1140                                   | 1.41474750 24                                                                | 2.47662310 05                                             |
| 1140                                   | 1150                                   | 1.38722480 24                                                                | 2.40723260 05                                             |
| 1150                                   | 1160                                   | 1.36037910 24                                                                | 2.34020840 05                                             |
| 1160                                   | 1170                                   | 1.33419120 24                                                                | 2.27545680 05                                             |
| 1170                                   | 1180                                   | 1.30864230 24                                                                | 2.21288790 05                                             |
| 1180                                   | 1190                                   | 1.28371430 24                                                                | 2.15241600 05                                             |
| 1190                                   | 1200                                   | 1.25938950 24                                                                | 2.09395930 05                                             |
| 1200                                   | 1210                                   | 1.23565090 24                                                                | 2.03743930 05                                             |
| 1210                                   | 1220                                   | 1.21248190 24                                                                | 1.98278120 05                                             |
| 1220                                   | 1230                                   | 1.18986640 24                                                                | 1.92991350 05                                             |
| 1230                                   | 1240                                   | 1.16778900 24                                                                | 1.87876750 05                                             |
| 1240                                   | 1250                                   | 1.14623460 24                                                                | 1.82927770 05                                             |
| 1250                                   | 1260                                   | 1.12518850 24                                                                | 1.78138150 05                                             |
| 1260                                   | 1270                                   | 1.10463650 24                                                                | 1.73501870 05                                             |
| 1270                                   | 1280                                   | 1.08456510 24                                                                | 1.69013190 05                                             |
| 1280                                   | 1290                                   | 1.06496080 24                                                                | 1.64666610 05                                             |
| 1290                                   | 1300                                   | 1.04581070 24                                                                | 1.60456860 05                                             |
| 1300                                   | 1310                                   | 1.02710250 24                                                                | 1.56378890 05                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 10000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 1.00882380 24                                                                | 1.52427860 05                                             |
| 1320                                   | 1330                                   | 9.90963100 23                                                                | 1.48599140 05                                             |
| 1330                                   | 1340                                   | 9.73508890 23                                                                | 1.44888280 05                                             |
| 1340                                   | 1350                                   | 9.56450170 23                                                                | 1.41291020 05                                             |
| 1350                                   | 1360                                   | 9.39776240 23                                                                | 1.37803290 05                                             |
| 1360                                   | 1370                                   | 9.23476720 23                                                                | 1.34421160 05                                             |
| 1370                                   | 1380                                   | 9.07541550 23                                                                | 1.31140870 05                                             |
| 1380                                   | 1390                                   | 8.91960990 23                                                                | 1.27958820 05                                             |
| 1390                                   | 1400                                   | 8.76725570 23                                                                | 1.24871560 05                                             |
| 1400                                   | 1410                                   | 8.61826120 23                                                                | 1.21875760 05                                             |
| 1410                                   | 1420                                   | 8.47253750 23                                                                | 1.18968220 05                                             |
| 1420                                   | 1430                                   | 8.32999830 23                                                                | 1.16145900 05                                             |
| 1430                                   | 1440                                   | 8.19056000 23                                                                | 1.13405850 05                                             |
| 1440                                   | 1450                                   | 8.05414130 23                                                                | 1.10745240 05                                             |
| 1450                                   | 1460                                   | 7.92066350 23                                                                | 1.08161370 05                                             |
| 1460                                   | 1470                                   | 7.79005020 23                                                                | 1.05651620 05                                             |
| 1470                                   | 1480                                   | 7.66222730 23                                                                | 1.03213490 05                                             |
| 1480                                   | 1490                                   | 7.53712290 23                                                                | 1.00844580 05                                             |
| 1490                                   | 1500                                   | 7.41466710 23                                                                | 9.85425500 04                                             |
| 1500                                   | 1510                                   | 7.29479220 23                                                                | 9.63051890 04                                             |
| 1510                                   | 1520                                   | 7.17743240 23                                                                | 9.41303500 04                                             |
| 1520                                   | 1530                                   | 7.06252390 23                                                                | 9.20159720 04                                             |
| 1530                                   | 1540                                   | 6.95000470 23                                                                | 8.99600710 04                                             |
| 1540                                   | 1550                                   | 6.83981470 23                                                                | 8.79607370 04                                             |
| 1550                                   | 1560                                   | 6.73189540 23                                                                | 8.60161320 04                                             |
| 1560                                   | 1570                                   | 6.62619010 23                                                                | 8.41244880 04                                             |
| 1570                                   | 1580                                   | 6.52264370 23                                                                | 8.22841000 04                                             |
| 1580                                   | 1590                                   | 6.42120270 23                                                                | 8.04933280 04                                             |
| 1590                                   | 1600                                   | 6.32181520 23                                                                | 7.87505900 04                                             |
| 1600                                   | 1610                                   | 6.22443060 23                                                                | 7.70543650 04                                             |
| 1610                                   | 1620                                   | 6.12899990 23                                                                | 7.54031840 04                                             |
| 1620                                   | 1630                                   | 6.03547540 23                                                                | 7.37956330 04                                             |
| 1630                                   | 1640                                   | 5.94381080 23                                                                | 7.22303480 04                                             |
| 1640                                   | 1650                                   | 5.85396110 23                                                                | 7.07060160 04                                             |
| 1650                                   | 1660                                   | 5.76588260 23                                                                | 6.92213690 04                                             |
| 1660                                   | 1670                                   | 5.67953280 23                                                                | 6.77751840 04                                             |
| 1670                                   | 1680                                   | 5.59487020 23                                                                | 6.63662820 04                                             |
| 1680                                   | 1690                                   | 5.51185480 23                                                                | 6.49935260 04                                             |
| 1690                                   | 1700                                   | 5.43044750 23                                                                | 6.36558170 04                                             |
| 1700                                   | 1710                                   | 5.35061020 23                                                                | 6.23520970 04                                             |
| 1710                                   | 1720                                   | 5.27230600 23                                                                | 6.10813430 04                                             |
| 1720                                   | 1730                                   | 5.19549910 23                                                                | 5.98425680 04                                             |
| 1730                                   | 1740                                   | 5.12015440 23                                                                | 5.86348170 04                                             |
| 1740                                   | 1750                                   | 5.04623800 23                                                                | 5.74571720 04                                             |
| 1750                                   | 1760                                   | 4.97371670 23                                                                | 5.63087430 04                                             |
| 1760                                   | 1770                                   | 4.90255840 23                                                                | 5.51886710 04                                             |
| 1770                                   | 1780                                   | 4.83273180 23                                                                | 5.40961260 04                                             |
| 1780                                   | 1790                                   | 4.76420640 23                                                                | 5.30303060 04                                             |
| 1790                                   | 1800                                   | 4.69695260 23                                                                | 5.19904360 04                                             |
| 1800                                   | 1810                                   | 4.63094140 23                                                                | 5.09757680 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 10000^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 4.56614480 23                                                                | 4.99855770 04                                             |
| 1820                                   | 1830                                   | 4.50253550 23                                                                | 4.90191630 04                                             |
| 1830                                   | 1840                                   | 4.44008670 23                                                                | 4.80758490 04                                             |
| 1840                                   | 1850                                   | 4.37877260 23                                                                | 4.71549800 04                                             |
| 1850                                   | 1860                                   | 4.31856790 23                                                                | 4.62559220 04                                             |
| 1860                                   | 1870                                   | 4.25944790 23                                                                | 4.53780620 04                                             |
| 1870                                   | 1880                                   | 4.20138880 23                                                                | 4.45208080 04                                             |
| 1880                                   | 1890                                   | 4.14436720 23                                                                | 4.36835850 04                                             |
| 1890                                   | 1900                                   | 4.08836040 23                                                                | 4.28658380 04                                             |
| 1900                                   | 1910                                   | 4.03334620 23                                                                | 4.20670290 04                                             |
| 1910                                   | 1920                                   | 3.97930300 23                                                                | 4.12866380 04                                             |
| 1920                                   | 1930                                   | 3.92620990 23                                                                | 4.05241610 04                                             |
| 1930                                   | 1940                                   | 3.87404620 23                                                                | 3.97791080 04                                             |
| 1940                                   | 1950                                   | 3.82279200 23                                                                | 3.90510080 04                                             |
| 1950                                   | 1960                                   | 3.77242790 23                                                                | 3.83394030 04                                             |
| 1960                                   | 1970                                   | 3.72293490 23                                                                | 3.76438480 04                                             |
| 1970                                   | 1980                                   | 3.67429450 23                                                                | 3.69639140 04                                             |
| 1980                                   | 1990                                   | 3.62648850 23                                                                | 3.62991830 04                                             |
| 1990                                   | 2000                                   | 3.57949950 23                                                                | 3.56492530 04                                             |
| 2000                                   | 2010                                   | 3.53331030 23                                                                | 3.50137310 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

T = 10000°K

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1} m^{-2} sr^{-1}$ | $N_{0,\Delta\lambda}$<br>$W m^{-2} sr^{-1}$ |
|----------------------------------------|----------------------------------------|---------------------------------------------------------|---------------------------------------------|
| 2000                                   | 2100                                   | 3.33785810 24                                           | 3.23737170 05                               |
| 2100                                   | 2200                                   | 2.94629980 24                                           | 2.72452220 05                               |
| 2200                                   | 2300                                   | 2.61322220 24                                           | 2.30899130 05                               |
| 2300                                   | 2400                                   | 2.32818740 24                                           | 1.96950870 05                               |
| 2400                                   | 2500                                   | 2.08299660 24                                           | 1.69001740 05                               |
| 2500                                   | 2600                                   | 1.87070100 24                                           | 1.45826830 05                               |
| 2600                                   | 2700                                   | 1.68623390 24                                           | 1.26482550 05                               |
| 2700                                   | 2800                                   | 1.52513370 24                                           | 1.10235330 05                               |
| 2800                                   | 2900                                   | 1.38383220 24                                           | 9.65100160 04                               |
| 2900                                   | 3000                                   | 1.25939250 24                                           | 8.48520280 04                               |
| 3000                                   | 3200                                   | 2.20116080 24                                           | 1.41261210 05                               |
| 3200                                   | 3400                                   | 1.85216210 24                                           | 1.11643540 05                               |
| 3400                                   | 3600                                   | 1.57303650 24                                           | 8.93892700 04                               |
| 3600                                   | 3800                                   | 1.34717780 24                                           | 7.24089340 04                               |
| 3800                                   | 4000                                   | 1.16248840 24                                           | 5.92725940 04                               |
| 4000                                   | 4200                                   | 1.01001670 24                                           | 4.89825040 04                               |
| 4200                                   | 4400                                   | 8.83044560 23                                           | 4.08301820 04                               |
| 4400                                   | 4600                                   | 7.76464550 23                                           | 3.43044800 04                               |
| 4600                                   | 4800                                   | 6.86347360 23                                           | 2.90312340 04                               |
| 4800                                   | 5000                                   | 6.09637150 23                                           | 2.47328990 04                               |
| 5000                                   | 5500                                   | 1.25612760 24                                           | 4.76770280 04                               |
| 5500                                   | 6000                                   | 9.67442890 23                                           | 3.35108060 04                               |
| 6000                                   | 6500                                   | 7.60831400 23                                           | 2.42368100 04                               |
| 6500                                   | 7000                                   | 6.09089320 23                                           | 1.79604710 04                               |
| 7000                                   | 7500                                   | 4.95151210 23                                           | 1.35906040 04                               |
| 7500                                   | 8000                                   | 4.07943120 23                                           | 1.04725880 04                               |
| 8000                                   | 8500                                   | 3.40055760 23                                           | 8.19967570 03                               |
| 8500                                   | 9000                                   | 2.85447320 23                                           | 5.51129420 03                               |
| 9000                                   | 9500                                   | 2.43532390 23                                           | 5.23597290 03                               |
| 9500                                   | 10000                                  | 2.08778320 23                                           | 4.25815160 03                               |
| 10000                                  | 11000                                  | 3.57164610 23                                           | 6.39899050 03                               |
| 11000                                  | 12000                                  | 2.58020350 23                                           | 4.46891100 03                               |
| 12000                                  | 13000                                  | 2.01835340 23                                           | 3.21490650 03                               |
| 13000                                  | 14000                                  | 1.60851170 23                                           | 2.37160380 03                               |
| 14000                                  | 15000                                  | 1.30255000 23                                           | 1.78761620 03                               |
| 15000                                  | 16000                                  | 1.06952980 23                                           | 1.37285480 03                               |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 7.8079536D 15                                                                | 5.0772174D-03                                             |
| 310                                    | 320                                    | 1.5248780D 16                                                                | 9.6026190D-03                                             |
| 320                                    | 330                                    | 2.8473900D 16                                                                | 1.7381858D-02                                             |
| 330                                    | 340                                    | 5.1045092D 16                                                                | 3.0234393D-02                                             |
| 340                                    | 350                                    | 8.8171926D 16                                                                | 5.0717275D-02                                             |
| 350                                    | 360                                    | 1.4722176D 17                                                                | 8.2306669D-02                                             |
| 360                                    | 370                                    | 2.3829848D 17                                                                | 1.2950697D-01                                             |
| 370                                    | 380                                    | 3.7487541D 17                                                                | 1.9843839D-01                                             |
| 380                                    | 390                                    | 5.7446262D 17                                                                | 2.9621309D-01                                             |
| 390                                    | 400                                    | 8.5928462D 17                                                                | 4.3188979D-01                                             |
| 400                                    | 410                                    | 1.2569417D 18                                                                | 6.1619745D-01                                             |
| 410                                    | 420                                    | 1.8010270D 18                                                                | 8.6170002D-01                                             |
| 420                                    | 430                                    | 2.5316727D 18                                                                | 1.1828358D 00                                             |
| 430                                    | 440                                    | 3.4959992D 18                                                                | 1.5959074D 00                                             |
| 440                                    | 450                                    | 4.7484463D 18                                                                | 2.1190202D 00                                             |
| 450                                    | 460                                    | 6.3509700D 18                                                                | 2.7719703D 00                                             |
| 460                                    | 470                                    | 8.3730910D 18                                                                | 3.5760836D 00                                             |
| 470                                    | 480                                    | 1.0891790D 19                                                                | 4.5540107D 00                                             |
| 480                                    | 490                                    | 1.3991248D 19                                                                | 5.7294845D 00                                             |
| 490                                    | 500                                    | 1.7762436D 19                                                                | 7.1270456D 00                                             |
| 500                                    | 510                                    | 2.2302561D 19                                                                | 8.7717452D 00                                             |
| 510                                    | 520                                    | 2.7714384D 19                                                                | 1.0688832D 01                                             |
| 520                                    | 530                                    | 3.4105427D 19                                                                | 1.2903433D 01                                             |
| 530                                    | 540                                    | 4.1587075D 19                                                                | 1.5440232D 01                                             |
| 540                                    | 550                                    | 5.0273618D 19                                                                | 1.8323161D 01                                             |
| 550                                    | 560                                    | 6.0281222D 19                                                                | 2.1575097D 01                                             |
| 560                                    | 570                                    | 7.1726879D 19                                                                | 2.5217591D 01                                             |
| 570                                    | 580                                    | 8.4727333D 19                                                                | 2.9270609D 01                                             |
| 580                                    | 590                                    | 9.9398023D 19                                                                | 3.3752308D 01                                             |
| 590                                    | 600                                    | 1.1585204D 20                                                                | 3.8678839D 01                                             |
| 600                                    | 610                                    | 1.3419911D 20                                                                | 4.4064186D 01                                             |
| 610                                    | 620                                    | 1.5454469D 20                                                                | 4.9920035D 01                                             |
| 620                                    | 630                                    | 1.7698902D 20                                                                | 5.6255678D 01                                             |
| 630                                    | 640                                    | 2.0162638D 20                                                                | 6.3077944D 01                                             |
| 640                                    | 650                                    | 2.2854431D 20                                                                | 7.0391171D 01                                             |
| 650                                    | 660                                    | 2.5782299D 20                                                                | 7.8197200D 01                                             |
| 660                                    | 670                                    | 2.8953471D 20                                                                | 8.6495395D 01                                             |
| 670                                    | 680                                    | 3.2374337D 20                                                                | 9.5282699D 01                                             |
| 680                                    | 690                                    | 3.6050414D 20                                                                | 1.0455370D 02                                             |
| 690                                    | 700                                    | 3.9986321D 20                                                                | 1.1430071D 02                                             |
| 700                                    | 710                                    | 4.4185753D 20                                                                | 1.2451390D 02                                             |
| 710                                    | 720                                    | 4.8651479D 20                                                                | 1.3518141D 02                                             |
| 720                                    | 730                                    | 5.3385333D 20                                                                | 1.4628947D 02                                             |
| 730                                    | 740                                    | 5.8388224D 20                                                                | 1.5782255D 02                                             |
| 740                                    | 750                                    | 6.3660145D 20                                                                | 1.6976352D 02                                             |
| 750                                    | 760                                    | 6.9200193D 20                                                                | 1.8209380D 02                                             |
| 760                                    | 770                                    | 7.5006591D 20                                                                | 1.9479351D 02                                             |
| 770                                    | 780                                    | 8.1076719D 20                                                                | 2.0784162D 02                                             |
| 780                                    | 790                                    | 8.7407146D 20                                                                | 2.2121616D 02                                             |
| 790                                    | 800                                    | 9.3993669D 20                                                                | 2.3489428D 02                                             |

R.K.H. Gebel. Blackbody functions.  
Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 1.00831350 21                                                                | 2.48852500 02                                             |
| 810                                    | 820                                    | 1.07914560 21                                                                | 2.63066770 02                                             |
| 820                                    | 830                                    | 1.15237020 21                                                                | 2.77512680 02                                             |
| 830                                    | 840                                    | 1.22791870 21                                                                | 2.92165560 02                                             |
| 840                                    | 850                                    | 1.30571670 21                                                                | 3.07000580 02                                             |
| 850                                    | 860                                    | 1.38568500 21                                                                | 3.21992940 02                                             |
| 860                                    | 870                                    | 1.46773960 21                                                                | 3.37117900 02                                             |
| 870                                    | 880                                    | 1.55179260 21                                                                | 3.52350960 02                                             |
| 880                                    | 890                                    | 1.63775250 21                                                                | 3.67667870 02                                             |
| 890                                    | 900                                    | 1.72552440 21                                                                | 3.83044810 02                                             |
| 900                                    | 910                                    | 1.81501100 21                                                                | 3.98458380 02                                             |
| 910                                    | 920                                    | 1.90611260 21                                                                | 4.13885750 02                                             |
| 920                                    | 930                                    | 1.99872770 21                                                                | 4.29304660 02                                             |
| 930                                    | 940                                    | 2.09275320 21                                                                | 4.44693500 02                                             |
| 940                                    | 950                                    | 2.18808520 21                                                                | 4.60031360 02                                             |
| 950                                    | 960                                    | 2.28461920 21                                                                | 4.75298080 02                                             |
| 960                                    | 970                                    | 2.38225000 21                                                                | 4.90474260 02                                             |
| 970                                    | 980                                    | 2.48087290 21                                                                | 5.05541300 02                                             |
| 980                                    | 990                                    | 2.58038330 21                                                                | 5.20481440 02                                             |
| 990                                    | 1000                                   | 2.68067710 21                                                                | 5.35277730 02                                             |
| 1000                                   | 1010                                   | 2.78165140 21                                                                | 5.49914110 02                                             |
| 1010                                   | 1020                                   | 2.88320430 21                                                                | 5.64375360 02                                             |
| 1020                                   | 1030                                   | 2.98523520 21                                                                | 5.78647120 02                                             |
| 1030                                   | 1040                                   | 3.08764540 21                                                                | 5.92715910 02                                             |
| 1040                                   | 1050                                   | 3.19033760 21                                                                | 6.06569080 02                                             |
| 1050                                   | 1060                                   | 3.29321680 21                                                                | 6.20194850 02                                             |
| 1060                                   | 1070                                   | 3.39619000 21                                                                | 6.33582270 02                                             |
| 1070                                   | 1080                                   | 3.49916650 21                                                                | 6.46721240 02                                             |
| 1080                                   | 1090                                   | 3.60205780 21                                                                | 6.59602430 02                                             |
| 1090                                   | 1100                                   | 3.70477820 21                                                                | 6.72217340 02                                             |
| 1100                                   | 1110                                   | 3.80724430 21                                                                | 6.84558210 02                                             |
| 1110                                   | 1120                                   | 3.90937560 21                                                                | 6.96618070 02                                             |
| 1120                                   | 1130                                   | 4.01109420 21                                                                | 7.08390640 02                                             |
| 1130                                   | 1140                                   | 4.11232500 21                                                                | 7.19870390 02                                             |
| 1140                                   | 1150                                   | 4.21299580 21                                                                | 7.31052430 02                                             |
| 1150                                   | 1160                                   | 4.31303700 21                                                                | 7.41932560 02                                             |
| 1160                                   | 1170                                   | 4.41238220 21                                                                | 7.52507200 02                                             |
| 1170                                   | 1180                                   | 4.51096770 21                                                                | 7.62773380 02                                             |
| 1180                                   | 1190                                   | 4.60873260 21                                                                | 7.72728700 02                                             |
| 1190                                   | 1200                                   | 4.70561900 21                                                                | 7.82371350 02                                             |
| 1200                                   | 1210                                   | 4.80157180 21                                                                | 7.91700020 02                                             |
| 1210                                   | 1220                                   | 4.89653860 21                                                                | 8.00713900 02                                             |
| 1220                                   | 1230                                   | 4.99047010 21                                                                | 8.09412690 02                                             |
| 1230                                   | 1240                                   | 5.08331940 21                                                                | 8.17796510 02                                             |
| 1240                                   | 1250                                   | 5.17504260 21                                                                | 8.25865930 02                                             |
| 1250                                   | 1260                                   | 5.26559830 21                                                                | 8.33621920 02                                             |
| 1260                                   | 1270                                   | 5.35494770 21                                                                | 8.41065820 02                                             |
| 1270                                   | 1280                                   | 5.44305480 21                                                                | 8.48199360 02                                             |
| 1280                                   | 1290                                   | 5.52988580 21                                                                | 8.55024560 02                                             |
| 1290                                   | 1300                                   | 5.61540960 21                                                                | 8.61543800 02                                             |
| 1300                                   | 1310                                   | 5.69959730 21                                                                | 8.67759710 02                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 5.78242260 21                                                                | 8.73675210 02                                             |
| 1320                                   | 1330                                   | 5.86386110 21                                                                | 8.79293490 02                                             |
| 1330                                   | 1340                                   | 5.94389090 21                                                                | 8.84617930 02                                             |
| 1340                                   | 1350                                   | 6.02249220 21                                                                | 8.89652160 02                                             |
| 1350                                   | 1360                                   | 6.09964700 21                                                                | 8.94399990 02                                             |
| 1360                                   | 1370                                   | 6.17533950 21                                                                | 8.98865410 02                                             |
| 1370                                   | 1380                                   | 6.24955590 21                                                                | 9.03052570 02                                             |
| 1380                                   | 1390                                   | 6.32228410 21                                                                | 9.06965780 02                                             |
| 1390                                   | 1400                                   | 6.39351390 21                                                                | 9.10609470 02                                             |
| 1400                                   | 1410                                   | 6.46323670 21                                                                | 9.13988170 02                                             |
| 1410                                   | 1420                                   | 6.53144560 21                                                                | 9.17106550 02                                             |
| 1420                                   | 1430                                   | 6.59813540 21                                                                | 9.19969350 02                                             |
| 1430                                   | 1440                                   | 6.66330230 21                                                                | 9.22581390 02                                             |
| 1440                                   | 1450                                   | 6.72694400 21                                                                | 9.24947560 02                                             |
| 1450                                   | 1460                                   | 6.78905950 21                                                                | 9.27072800 02                                             |
| 1460                                   | 1470                                   | 6.84964920 21                                                                | 9.28962090 02                                             |
| 1470                                   | 1480                                   | 6.90871490 21                                                                | 9.30620470 02                                             |
| 1480                                   | 1490                                   | 6.96625940 21                                                                | 9.32052990 02                                             |
| 1490                                   | 1500                                   | 7.02228680 21                                                                | 9.33264700 02                                             |
| 1500                                   | 1510                                   | 7.07680210 21                                                                | 9.34260690 02                                             |
| 1510                                   | 1520                                   | 7.12981150 21                                                                | 9.35046050 02                                             |
| 1520                                   | 1530                                   | 7.18132210 21                                                                | 9.35625830 02                                             |
| 1530                                   | 1540                                   | 7.23134210 21                                                                | 9.36005100 02                                             |
| 1540                                   | 1550                                   | 7.27988030 21                                                                | 9.36188900 02                                             |
| 1550                                   | 1560                                   | 7.32694640 21                                                                | 9.36182250 02                                             |
| 1560                                   | 1570                                   | 7.37255100 21                                                                | 9.35990140 02                                             |
| 1570                                   | 1580                                   | 7.41670550 21                                                                | 9.35617520 02                                             |
| 1580                                   | 1590                                   | 7.45942160 21                                                                | 9.35069300 02                                             |
| 1590                                   | 1600                                   | 7.50071200 21                                                                | 9.34350350 02                                             |
| 1600                                   | 1610                                   | 7.54058980 21                                                                | 9.33465490 02                                             |
| 1610                                   | 1620                                   | 7.57906880 21                                                                | 9.32419500 02                                             |
| 1620                                   | 1630                                   | 7.61616320 21                                                                | 9.31217090 02                                             |
| 1630                                   | 1640                                   | 7.65188770 21                                                                | 9.29862710 02                                             |
| 1640                                   | 1650                                   | 7.68625740 21                                                                | 9.28361570 02                                             |
| 1650                                   | 1660                                   | 7.71928800 21                                                                | 9.26717590 02                                             |
| 1660                                   | 1670                                   | 7.75099530 21                                                                | 9.24935460 02                                             |
| 1670                                   | 1680                                   | 7.78139570 21                                                                | 9.23019570 02                                             |
| 1680                                   | 1690                                   | 7.81050550 21                                                                | 9.20974250 02                                             |
| 1690                                   | 1700                                   | 7.83834180 21                                                                | 9.18803780 02                                             |
| 1700                                   | 1710                                   | 7.86492160 21                                                                | 9.16512340 02                                             |
| 1710                                   | 1720                                   | 7.89026220 21                                                                | 9.14104060 02                                             |
| 1720                                   | 1730                                   | 7.91438100 21                                                                | 9.11582980 02                                             |
| 1730                                   | 1740                                   | 7.93729590 21                                                                | 9.08953070 02                                             |
| 1740                                   | 1750                                   | 7.95902440 21                                                                | 9.06218240 02                                             |
| 1750                                   | 1760                                   | 7.97958470 21                                                                | 9.03382320 02                                             |
| 1760                                   | 1770                                   | 7.99899470 21                                                                | 9.00449030 02                                             |
| 1770                                   | 1780                                   | 8.01727260 21                                                                | 8.97422070 02                                             |
| 1780                                   | 1790                                   | 8.03443540 21                                                                | 8.94305020 02                                             |
| 1790                                   | 1800                                   | 8.05050440 21                                                                | 8.91101410 02                                             |
| 1800                                   | 1810                                   | 8.06549490 21                                                                | 8.87814680 02                                             |

R.K.H. Gebel, Blackbody functions.  
 Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 1870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 8.07942600 21                                                                  | 8.84448200 02                                              |
| 1820                                           | 1830                                           | 8.09231600 21                                                                  | 8.81005270 02                                              |
| 1830                                           | 1840                                           | 8.10418320 21                                                                  | 8.77489110 02                                              |
| 1840                                           | 1850                                           | 8.11504550 21                                                                  | 8.73902860 02                                              |
| 1850                                           | 1860                                           | 8.12492130 21                                                                  | 8.70249590 02                                              |
| 1860                                           | 1870                                           | 8.13382840 21                                                                  | 8.66532320 02                                              |
| 1870                                           | 1880                                           | 8.14178490 21                                                                  | 8.62753960 02                                              |
| 1880                                           | 1890                                           | 8.14880860 21                                                                  | 8.58917370 02                                              |
| 1890                                           | 1900                                           | 8.15491740 21                                                                  | 8.55025330 02                                              |
| 1900                                           | 1910                                           | 8.16012880 21                                                                  | 8.51080570 02                                              |
| 1910                                           | 1920                                           | 8.16446050 21                                                                  | 8.47085730 02                                              |
| 1920                                           | 1930                                           | 8.16792980 21                                                                  | 8.43043390 02                                              |
| 1930                                           | 1940                                           | 8.17055410 21                                                                  | 8.38956060 02                                              |
| 1940                                           | 1950                                           | 8.17235050 21                                                                  | 8.34826180 02                                              |
| 1950                                           | 1960                                           | 8.17333600 21                                                                  | 8.30656140 02                                              |
| 1960                                           | 1970                                           | 8.17352750 21                                                                  | 8.26448260 02                                              |
| 1970                                           | 1980                                           | 8.17294150 21                                                                  | 8.22204780 02                                              |
| 1980                                           | 1990                                           | 8.17159480 21                                                                  | 8.17927900 02                                              |
| 1990                                           | 2000                                           | 8.16950350 21                                                                  | 8.13619750 02                                              |
| 2000                                           | 2010                                           | 8.16668390 21                                                                  | 8.09282400 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 1870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 8.14275490 22                                                                  | 7.89377590 03                                              |
| 2100                                           | 2200                                           | 8.05136640 22                                                                  | 7.44221260 03                                              |
| 2200                                           | 2300                                           | 7.90949580 22                                                                  | 6.98616290 03                                              |
| 2300                                           | 2400                                           | 7.72916540 22                                                                  | 6.53637760 03                                              |
| 2400                                           | 2500                                           | 7.52046600 22                                                                  | 6.10028260 03                                              |
| 2500                                           | 2600                                           | 7.29172630 22                                                                  | 5.68276410 03                                              |
| 2600                                           | 2700                                           | 7.04972360 22                                                                  | 5.28680550 03                                              |
| 2700                                           | 2800                                           | 6.79990220 22                                                                  | 4.91399170 03                                              |
| 2800                                           | 2900                                           | 6.54658100 22                                                                  | 4.56489990 03                                              |
| 2900                                           | 3000                                           | 6.29314250 22                                                                  | 4.23939760 03                                              |
| 3000                                           | 3200                                           | 1.18379280 23                                                                  | 7.59323630 03                                              |
| 3200                                           | 3400                                           | 1.08769110 23                                                                  | 6.55361270 03                                              |
| 3400                                           | 3600                                           | 9.97434920 22                                                                  | 5.66678310 03                                              |
| 3600                                           | 3800                                           | 9.13832310 22                                                                  | 4.91032200 03                                              |
| 3800                                           | 4000                                           | 8.37096250 22                                                                  | 4.26713470 03                                              |
| 4000                                           | 4200                                           | 7.67083910 22                                                                  | 3.71934580 03                                              |
| 4200                                           | 4400                                           | 7.03451550 22                                                                  | 3.25204680 03                                              |
| 4400                                           | 4600                                           | 6.45752930 22                                                                  | 2.85252760 03                                              |
| 4600                                           | 4800                                           | 5.93500650 22                                                                  | 2.51006860 03                                              |
| 4800                                           | 5000                                           | 5.46203360 22                                                                  | 2.21569480 03                                              |
| 5000                                           | 5500                                           | 1.18690740 23                                                                  | 4.50237340 03                                              |
| 5500                                           | 6000                                           | 9.76700010 22                                                                  | 3.38168560 03                                              |
| 6000                                           | 6500                                           | 8.11235080 22                                                                  | 2.58339100 03                                              |
| 6500                                           | 7000                                           | 6.79884780 22                                                                  | 2.00428570 03                                              |
| 7000                                           | 7500                                           | 5.74661770 22                                                                  | 1.57697050 03                                              |
| 7500                                           | 8000                                           | 4.89593310 22                                                                  | 1.25665850 03                                              |
| 8000                                           | 8500                                           | 4.20203660 22                                                                  | 1.01305730 03                                              |
| 8500                                           | 9000                                           | 3.63119720 22                                                                  | 8.25320940 02                                              |
| 9000                                           | 9500                                           | 3.15780220 22                                                                  | 6.78865910 02                                              |
| 9500                                           | 10000                                          | 2.76224120 22                                                                  | 5.63330240 02                                              |
| 10000                                          | 11000                                          | 4.57676210 22                                                                  | 8.68392060 02                                              |
| 11000                                          | 12000                                          | 3.60803240 22                                                                  | 6.24789730 02                                              |
| 12000                                          | 13000                                          | 2.89286470 22                                                                  | 4.60717000 02                                              |
| 13000                                          | 14000                                          | 2.35393950 22                                                                  | 3.47025990 02                                              |
| 14000                                          | 15000                                          | 1.94041630 22                                                                  | 2.66277070 02                                              |
| 15000                                          | 16000                                          | 1.61799670 22                                                                  | 2.07671050 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2046^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 6.8133784D 16                                                                | 4.4313235D-02                                             |
| 310                                    | 320                                    | 1.2426427D 17                                                                | 7.8266498D-02                                             |
| 320                                    | 330                                    | 2.1759778D 17                                                                | 1.3285326D-01                                             |
| 330                                    | 340                                    | 3.6720510D 17                                                                | 2.1752975D-01                                             |
| 340                                    | 350                                    | 5.9915834D 17                                                                | 3.4468684D-01                                             |
| 350                                    | 360                                    | 9.4803277D 17                                                                | 5.3007733D-01                                             |
| 360                                    | 370                                    | 1.4584240D 18                                                                | 7.9318149D-01                                             |
| 370                                    | 380                                    | 2.1864083D 18                                                                | 1.1574839D 00                                             |
| 380                                    | 390                                    | 3.2008709D 18                                                                | 1.6506395D 00                                             |
| 390                                    | 400                                    | 4.5846324D 18                                                                | 2.3045120D 00                                             |
| 400                                    | 410                                    | 6.4353086D 18                                                                | 3.1550770D 00                                             |
| 410                                    | 420                                    | 8.8658536D 18                                                                | 4.2421863D 00                                             |
| 420                                    | 430                                    | 1.2004749D 19                                                                | 5.6092008D 00                                             |
| 430                                    | 440                                    | 1.5995815D 19                                                                | 7.3025020D 00                                             |
| 440                                    | 450                                    | 2.0997649D 19                                                                | 9.3708996D 00                                             |
| 450                                    | 460                                    | 2.7182680D 19                                                                | 1.1864956D 01                                             |
| 460                                    | 470                                    | 3.4735895D 19                                                                | 1.4836248D 01                                             |
| 470                                    | 480                                    | 4.3853234D 19                                                                | 1.8336594D 01                                             |
| 480                                    | 490                                    | 5.4739735D 19                                                                | 2.2417269D 01                                             |
| 490                                    | 500                                    | 6.7607456D 19                                                                | 2.7128220D 01                                             |
| 500                                    | 510                                    | 8.2673232D 19                                                                | 3.2517320D 01                                             |
| 510                                    | 520                                    | 1.0015634D 20                                                                | 3.8629666D 01                                             |
| 520                                    | 530                                    | 1.2027608D 20                                                                | 4.5506932D 01                                             |
| 530                                    | 540                                    | 1.4324941D 20                                                                | 5.3186806D 01                                             |
| 540                                    | 550                                    | 1.6928860D 20                                                                | 6.1702495D 01                                             |
| 550                                    | 560                                    | 1.9859895D 20                                                                | 7.1082330D 01                                             |
| 560                                    | 570                                    | 2.3137673D 20                                                                | 8.1349447D 01                                             |
| 570                                    | 580                                    | 2.6780714D 20                                                                | 9.2521564D 01                                             |
| 580                                    | 590                                    | 3.0806264D 20                                                                | 1.0461084D 02                                             |
| 590                                    | 600                                    | 3.5230130D 20                                                                | 1.1762384D 02                                             |
| 600                                    | 610                                    | 4.0066551D 20                                                                | 1.3156152D 02                                             |
| 610                                    | 620                                    | 4.5328082D 20                                                                | 1.4641934D 02                                             |
| 620                                    | 630                                    | 5.1025507D 20                                                                | 1.6218742D 02                                             |
| 630                                    | 640                                    | 5.7167773D 20                                                                | 1.7885076D 02                                             |
| 640                                    | 650                                    | 6.3761940D 20                                                                | 1.9638948D 02                                             |
| 650                                    | 660                                    | 7.0813162D 20                                                                | 2.1477912D 02                                             |
| 660                                    | 670                                    | 7.8324678D 20                                                                | 2.3399098D 02                                             |
| 670                                    | 680                                    | 8.6297827D 20                                                                | 2.5399245D 02                                             |
| 680                                    | 690                                    | 9.4732080D 20                                                                | 2.7474743D 02                                             |
| 690                                    | 700                                    | 1.0362508D 21                                                                | 2.9621666D 02                                             |
| 700                                    | 710                                    | 1.1297271D 21                                                                | 3.1835813D 02                                             |
| 710                                    | 720                                    | 1.2276914D 21                                                                | 3.4112747D 02                                             |
| 720                                    | 730                                    | 1.3300694D 21                                                                | 3.6447833D 02                                             |
| 730                                    | 740                                    | 1.4367716D 21                                                                | 3.8836273D 02                                             |
| 740                                    | 750                                    | 1.5476938D 21                                                                | 4.1273147D 02                                             |
| 750                                    | 760                                    | 1.6627188D 21                                                                | 4.3753442D 02                                             |
| 760                                    | 770                                    | 1.7817170D 21                                                                | 4.6272090D 02                                             |
| 770                                    | 780                                    | 1.9045474D 21                                                                | 4.8823993D 02                                             |
| 780                                    | 790                                    | 2.0310592D 21                                                                | 5.1404060D 02                                             |
| 790                                    | 800                                    | 2.1610920D 21                                                                | 5.4007225D 02                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $i_{0,\Delta\lambda}$ .

$T = 2046^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 2.29447790 21                                                                | 5.66284780 02                                             |
| 810                                    | 820                                    | 2.43104170 21                                                                | 5.92628840 02                                             |
| 820                                    | 830                                    | 2.57060240 21                                                                | 6.19056050 02                                             |
| 830                                    | 840                                    | 2.71297400 21                                                                | 6.45519160 02                                             |
| 840                                    | 850                                    | 2.85796650 21                                                                | 6.71972250 02                                             |
| 850                                    | 860                                    | 3.00538710 21                                                                | 6.98370810 02                                             |
| 860                                    | 870                                    | 3.15504050 21                                                                | 7.24671920 02                                             |
| 870                                    | 880                                    | 3.30673030 21                                                                | 7.50834300 02                                             |
| 880                                    | 890                                    | 3.46025940 21                                                                | 7.76818430 02                                             |
| 890                                    | 900                                    | 3.61543120 21                                                                | 8.02586600 02                                             |
| 900                                    | 910                                    | 3.77204980 21                                                                | 8.28102960 02                                             |
| 910                                    | 920                                    | 3.92992070 21                                                                | 8.53333560 02                                             |
| 920                                    | 930                                    | 4.08885180 21                                                                | 8.78246390 02                                             |
| 930                                    | 940                                    | 4.24865360 21                                                                | 9.02811360 02                                             |
| 940                                    | 950                                    | 4.40913960 21                                                                | 9.27000320 02                                             |
| 950                                    | 960                                    | 4.57012710 21                                                                | 9.50787070 02                                             |
| 960                                    | 970                                    | 4.73143740 21                                                                | 9.74147300 02                                             |
| 970                                    | 980                                    | 4.89289600 21                                                                | 9.97058590 02                                             |
| 980                                    | 990                                    | 5.05433320 21                                                                | 1.01950040 03                                             |
| 990                                    | 1000                                   | 5.21558420 21                                                                | 1.04145390 03                                             |
| 1000                                   | 1010                                   | 5.37648940 21                                                                | 1.06290220 03                                             |
| 1010                                   | 1020                                   | 5.53689460 21                                                                | 1.08383000 03                                             |
| 1020                                   | 1030                                   | 5.69665110 21                                                                | 1.10422370 03                                             |
| 1030                                   | 1040                                   | 5.85561590 21                                                                | 1.12407140 03                                             |
| 1040                                   | 1050                                   | 6.01365160 21                                                                | 1.14336260 03                                             |
| 1050                                   | 1060                                   | 6.17062680 21                                                                | 1.16208830 03                                             |
| 1060                                   | 1070                                   | 6.32641600 21                                                                | 1.18024110 03                                             |
| 1070                                   | 1080                                   | 6.48089940 21                                                                | 1.19781490 03                                             |
| 1080                                   | 1090                                   | 6.63396340 21                                                                | 1.21480480 03                                             |
| 1090                                   | 1100                                   | 6.78550000 21                                                                | 1.23120730 03                                             |
| 1100                                   | 1110                                   | 6.93540720 21                                                                | 1.24701990 03                                             |
| 1110                                   | 1120                                   | 7.08358870 21                                                                | 1.26224130 03                                             |
| 1120                                   | 1130                                   | 7.22995390 21                                                                | 1.27687140 03                                             |
| 1130                                   | 1140                                   | 7.37441780 21                                                                | 1.29091080 03                                             |
| 1140                                   | 1150                                   | 7.51690110 21                                                                | 1.30436130 03                                             |
| 1150                                   | 1160                                   | 7.65732970 21                                                                | 1.31722550 03                                             |
| 1160                                   | 1170                                   | 7.79563490 21                                                                | 1.32950670 03                                             |
| 1170                                   | 1180                                   | 7.93175320 21                                                                | 1.34120900 03                                             |
| 1180                                   | 1190                                   | 8.06562600 21                                                                | 1.35233730 03                                             |
| 1190                                   | 1200                                   | 8.19719980 21                                                                | 1.36289720 03                                             |
| 1200                                   | 1210                                   | 8.32642570 21                                                                | 1.37289160 03                                             |
| 1210                                   | 1220                                   | 8.45325960 21                                                                | 1.38233630 03                                             |
| 1220                                   | 1230                                   | 8.57766160 21                                                                | 1.39122940 03                                             |
| 1230                                   | 1240                                   | 8.69959640 21                                                                | 1.39958160 03                                             |
| 1240                                   | 1250                                   | 8.81903260 21                                                                | 1.40740080 03                                             |
| 1250                                   | 1260                                   | 8.93594300 21                                                                | 1.41469560 03                                             |
| 1260                                   | 1270                                   | 9.05030420 21                                                                | 1.42147460 03                                             |
| 1270                                   | 1280                                   | 9.16209650 21                                                                | 1.42774690 03                                             |
| 1280                                   | 1290                                   | 9.27130370 21                                                                | 1.43352200 03                                             |
| 1290                                   | 1300                                   | 9.37791290 21                                                                | 1.43880920 03                                             |
| 1300                                   | 1310                                   | 9.48191480 21                                                                | 1.44361840 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2046^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1310                                           | 1320                                           | 9.58330290 21                                                                  | 1.44795960 03                                              |
| 1320                                           | 1330                                           | 9.68207370 21                                                                  | 1.45184270 03                                              |
| 1330                                           | 1340                                           | 9.77822650 21                                                                  | 1.45527810 03                                              |
| 1340                                           | 1350                                           | 9.87176330 21                                                                  | 1.45827590 03                                              |
| 1350                                           | 1360                                           | 9.96268870 21                                                                  | 1.46084650 03                                              |
| 1360                                           | 1370                                           | 1.00510100 22                                                                  | 1.46300040 03                                              |
| 1370                                           | 1380                                           | 1.01367350 22                                                                  | 1.46474790 03                                              |
| 1380                                           | 1390                                           | 1.02198770 22                                                                  | 1.46609950 03                                              |
| 1390                                           | 1400                                           | 1.03004480 22                                                                  | 1.46706560 03                                              |
| 1400                                           | 1410                                           | 1.03784640 22                                                                  | 1.46765660 03                                              |
| 1410                                           | 1420                                           | 1.04539410 22                                                                  | 1.46788270 03                                              |
| 1420                                           | 1430                                           | 1.05268990 22                                                                  | 1.46775450 03                                              |
| 1430                                           | 1440                                           | 1.05973580 22                                                                  | 1.46728190 03                                              |
| 1440                                           | 1450                                           | 1.06653390 22                                                                  | 1.46647520 03                                              |
| 1450                                           | 1460                                           | 1.07308650 22                                                                  | 1.46534440 03                                              |
| 1460                                           | 1470                                           | 1.07939610 22                                                                  | 1.46389950 03                                              |
| 1470                                           | 1480                                           | 1.08546530 22                                                                  | 1.46215020 03                                              |
| 1480                                           | 1490                                           | 1.09129660 22                                                                  | 1.46010630 03                                              |
| 1490                                           | 1500                                           | 1.09689290 22                                                                  | 1.45777740 03                                              |
| 1500                                           | 1510                                           | 1.10225700 22                                                                  | 1.45517280 03                                              |
| 1510                                           | 1520                                           | 1.10739180 22                                                                  | 1.45230190 03                                              |
| 1520                                           | 1530                                           | 1.11230030 22                                                                  | 1.44917380 03                                              |
| 1530                                           | 1540                                           | 1.11698550 22                                                                  | 1.44579760 03                                              |
| 1540                                           | 1550                                           | 1.12145070 22                                                                  | 1.44218200 03                                              |
| 1550                                           | 1560                                           | 1.12569900 22                                                                  | 1.43833580 03                                              |
| 1560                                           | 1570                                           | 1.12973370 22                                                                  | 1.43426750 03                                              |
| 1570                                           | 1580                                           | 1.13355790 22                                                                  | 1.42998540 03                                              |
| 1580                                           | 1590                                           | 1.13717510 22                                                                  | 1.42549780 03                                              |
| 1590                                           | 1600                                           | 1.14058850 22                                                                  | 1.42081260 03                                              |
| 1600                                           | 1610                                           | 1.14380150 22                                                                  | 1.41593780 03                                              |
| 1610                                           | 1620                                           | 1.14681750 22                                                                  | 1.41088090 03                                              |
| 1620                                           | 1630                                           | 1.14963990 22                                                                  | 1.40564960 03                                              |
| 1630                                           | 1640                                           | 1.15227220 22                                                                  | 1.40025110 03                                              |
| 1640                                           | 1650                                           | 1.15471760 22                                                                  | 1.39469270 03                                              |
| 1650                                           | 1660                                           | 1.15697970 22                                                                  | 1.38898140 03                                              |
| 1660                                           | 1670                                           | 1.15906190 22                                                                  | 1.38312390 03                                              |
| 1670                                           | 1680                                           | 1.16096760 22                                                                  | 1.37712710 03                                              |
| 1680                                           | 1690                                           | 1.16270020 22                                                                  | 1.37099730 03                                              |
| 1690                                           | 1700                                           | 1.16426320 22                                                                  | 1.36474090 03                                              |
| 1700                                           | 1710                                           | 1.16565980 22                                                                  | 1.35836410 03                                              |
| 1710                                           | 1720                                           | 1.16689340 22                                                                  | 1.35187280 03                                              |
| 1720                                           | 1730                                           | 1.16796750 22                                                                  | 1.34527310 03                                              |
| 1730                                           | 1740                                           | 1.16888530 22                                                                  | 1.33857050 03                                              |
| 1740                                           | 1750                                           | 1.16965020 22                                                                  | 1.33177050 03                                              |
| 1750                                           | 1760                                           | 1.17026550 22                                                                  | 1.32487870 03                                              |
| 1760                                           | 1770                                           | 1.17073430 22                                                                  | 1.31790010 03                                              |
| 1770                                           | 1780                                           | 1.17106000 22                                                                  | 1.31083990 03                                              |
| 1780                                           | 1790                                           | 1.17124570 22                                                                  | 1.30370300 03                                              |
| 1790                                           | 1800                                           | 1.17129470 22                                                                  | 1.29649430 03                                              |
| 1800                                           | 1810                                           | 1.17121000 22                                                                  | 1.28921820 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2046^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 1.17099470 22                                                                  | 1.28187950 03                                              |
| 1820                                           | 1830                                           | 1.17065190 22                                                                  | 1.27448230 03                                              |
| 1830                                           | 1840                                           | 1.17018470 22                                                                  | 1.26703100 03                                              |
| 1840                                           | 1850                                           | 1.16959600 22                                                                  | 1.25952970 03                                              |
| 1850                                           | 1860                                           | 1.16888880 22                                                                  | 1.25198240 03                                              |
| 1860                                           | 1870                                           | 1.16806600 22                                                                  | 1.24439280 03                                              |
| 1870                                           | 1880                                           | 1.16713050 22                                                                  | 1.23676470 03                                              |
| 1880                                           | 1890                                           | 1.16608510 22                                                                  | 1.22910180 03                                              |
| 1890                                           | 1900                                           | 1.16493260 22                                                                  | 1.22140740 03                                              |
| 1900                                           | 1910                                           | 1.16367590 22                                                                  | 1.21368510 03                                              |
| 1910                                           | 1920                                           | 1.16231750 22                                                                  | 1.20593790 03                                              |
| 1920                                           | 1930                                           | 1.16086020 22                                                                  | 1.19816920 03                                              |
| 1930                                           | 1940                                           | 1.15930660 22                                                                  | 1.19038190 03                                              |
| 1940                                           | 1950                                           | 1.15765920 22                                                                  | 1.18257890 03                                              |
| 1950                                           | 1960                                           | 1.15592080 22                                                                  | 1.17476310 03                                              |
| 1960                                           | 1970                                           | 1.15409360 22                                                                  | 1.16693720 03                                              |
| 1970                                           | 1980                                           | 1.15218030 22                                                                  | 1.15910390 03                                              |
| 1980                                           | 1990                                           | 1.15018330 22                                                                  | 1.15126560 03                                              |
| 1990                                           | 2000                                           | 1.14810480 22                                                                  | 1.14342490 03                                              |
| 2000                                           | 2010                                           | 1.14594740 22                                                                  | 1.13558410 03                                              |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2046^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 2000                                   | 2100                                   | 1.13504510 23                                                                | 1.10040420 04                                             |
| 2100                                   | 2200                                   | 1.10691960 23                                                                | 1.02322370 04                                             |
| 2200                                   | 2300                                   | 1.07395700 23                                                                | 9.48627770 03                                             |
| 2300                                   | 2400                                   | 1.03769990 23                                                                | 8.77592410 03                                             |
| 2400                                   | 2500                                   | 9.99377820 22                                                                | 8.10679840 03                                             |
| 2500                                   | 2600                                   | 9.59955490 22                                                                | 7.48157550 03                                             |
| 2600                                   | 2700                                   | 9.20178840 22                                                                | 6.90088330 03                                             |
| 2700                                   | 2800                                   | 8.80615390 22                                                                | 6.36396740 03                                             |
| 2800                                   | 2900                                   | 8.41689110 22                                                                | 5.86917770 03                                             |
| 2900                                   | 3000                                   | 8.03709580 22                                                                | 5.41431620 03                                             |
| 3000                                   | 3200                                   | 1.49829290 23                                                                | 9.61113790 03                                             |
| 3200                                   | 3400                                   | 1.36197940 23                                                                | 8.20668170 03                                             |
| 3400                                   | 3500                                   | 1.23735920 23                                                                | 7.02930200 03                                             |
| 3600                                   | 3800                                   | 1.12440030 23                                                                | 6.04198180 03                                             |
| 3800                                   | 4000                                   | 1.02255580 23                                                                | 5.21267460 03                                             |
| 4000                                   | 4200                                   | 9.31021750 22                                                                | 4.51433960 03                                             |
| 4200                                   | 4400                                   | 8.48890340 22                                                                | 3.92449110 03                                             |
| 4400                                   | 4600                                   | 7.75240310 22                                                                | 3.42458320 03                                             |
| 4600                                   | 4800                                   | 7.09196750 22                                                                | 2.99938250 03                                             |
| 4800                                   | 5000                                   | 6.49906710 22                                                                | 2.63639580 03                                             |
| 5000                                   | 5500                                   | 1.40330450 23                                                                | 5.32361270 03                                             |
| 5500                                   | 6000                                   | 1.14574580 23                                                                | 3.96718630 03                                             |
| 6000                                   | 6500                                   | 9.45534890 22                                                                | 3.01118800 03                                             |
| 6500                                   | 7000                                   | 7.88193990 22                                                                | 2.32364930 03                                             |
| 7000                                   | 7500                                   | 6.63136390 22                                                                | 1.81994100 03                                             |
| 7500                                   | 8000                                   | 5.62816890 22                                                                | 1.44463240 03                                             |
| 8000                                   | 8500                                   | 4.81422840 22                                                                | 1.16066730 03                                             |
| 8500                                   | 9000                                   | 4.14797840 22                                                                | 9.42790530 02                                             |
| 9000                                   | 9500                                   | 3.59785350 22                                                                | 7.73476850 02                                             |
| 9500                                   | 10000                                  | 3.13992160 22                                                                | 6.40360170 02                                             |
| 10000                                  | 11000                                  | 5.18733050 22                                                                | 9.84269820 02                                             |
| 11000                                  | 12000                                  | 4.07560470 22                                                                | 7.05773010 02                                             |
| 12000                                  | 13000                                  | 3.25866400 22                                                                | 5.18982870 02                                             |
| 13000                                  | 14000                                  | 2.64539150 22                                                                | 3.89998010 02                                             |
| 14000                                  | 15000                                  | 2.17632310 22                                                                | 2.98652950 02                                             |
| 15000                                  | 16000                                  | 1.81158810 22                                                                | 2.32520650 02                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 300                                    | 310                                    | 5.06384690 19                                                                | 3.29537740 01                                             |
| 310                                    | 320                                    | 7.49357360 19                                                                | 4.72225380 01                                             |
| 320                                    | 330                                    | 1.07835940 20                                                                | 6.58706090 01                                             |
| 330                                    | 340                                    | 1.51298910 20                                                                | 8.96681430 01                                             |
| 340                                    | 350                                    | 2.07445650 20                                                                | 1.19388860 02                                             |
| 350                                    | 360                                    | 2.78517950 20                                                                | 1.55786970 02                                             |
| 360                                    | 370                                    | 3.66832560 20                                                                | 1.99574880 02                                             |
| 370                                    | 380                                    | 4.74731990 20                                                                | 2.51402690 02                                             |
| 380                                    | 390                                    | 6.04534310 20                                                                | 3.11840400 02                                             |
| 390                                    | 400                                    | 7.58483910 20                                                                | 3.81363230 02                                             |
| 400                                    | 410                                    | 9.38705210 20                                                                | 4.60340650 02                                             |
| 410                                    | 420                                    | 1.14716050 21                                                                | 5.49028910 02                                             |
| 420                                    | 430                                    | 1.38561350 21                                                                | 6.47567240 02                                             |
| 430                                    | 440                                    | 1.65559840 21                                                                | 7.55977380 02                                             |
| 440                                    | 450                                    | 1.95839650 21                                                                | 8.74166040 02                                             |
| 450                                    | 460                                    | 2.29501830 21                                                                | 1.00193000 03                                             |
| 460                                    | 470                                    | 2.66619300 21                                                                | 1.13896320 03                                             |
| 470                                    | 480                                    | 3.07236380 21                                                                | 1.28486570 03                                             |
| 480                                    | 490                                    | 3.51368880 21                                                                | 1.43915390 03                                             |
| 490                                    | 500                                    | 3.99004680 21                                                                | 1.60127100 03                                             |
| 500                                    | 510                                    | 4.50104810 21                                                                | 1.77059870 03                                             |
| 510                                    | 520                                    | 5.04604810 21                                                                | 1.94646820 03                                             |
| 520                                    | 530                                    | 5.62416440 21                                                                | 2.12817210 03                                             |
| 530                                    | 540                                    | 6.23429620 21                                                                | 2.31497420 03                                             |
| 540                                    | 550                                    | 6.87514480 21                                                                | 2.50612050 03                                             |
| 550                                    | 560                                    | 7.54523600 21                                                                | 2.70084840 03                                             |
| 560                                    | 570                                    | 8.24294230 21                                                                | 2.89839550 03                                             |
| 570                                    | 580                                    | 8.96650570 21                                                                | 3.09800720 03                                             |
| 580                                    | 590                                    | 9.71405980 21                                                                | 3.29894370 03                                             |
| 590                                    | 600                                    | 1.04836520 22                                                                | 3.50048590 03                                             |
| 600                                    | 610                                    | 1.12732620 22                                                                | 3.70194080 03                                             |
| 610                                    | 620                                    | 1.20808260 22                                                                | 3.90264540 03                                             |
| 620                                    | 630                                    | 1.29042500 22                                                                | 4.10197020 03                                             |
| 630                                    | 640                                    | 1.37414310 22                                                                | 4.29932220 03                                             |
| 640                                    | 650                                    | 1.45902700 22                                                                | 4.49414650 03                                             |
| 650                                    | 660                                    | 1.54486870 22                                                                | 4.68592790 03                                             |
| 660                                    | 670                                    | 1.63146320 22                                                                | 4.87419150 03                                             |
| 670                                    | 680                                    | 1.71861010 22                                                                | 5.05850320 03                                             |
| 680                                    | 690                                    | 1.80611400 22                                                                | 5.23846970 03                                             |
| 690                                    | 700                                    | 1.89378580 22                                                                | 5.41373730 03                                             |
| 700                                    | 710                                    | 1.98144290 22                                                                | 5.58399210 03                                             |
| 710                                    | 720                                    | 2.06891050 22                                                                | 5.74895790 03                                             |
| 720                                    | 730                                    | 2.15602130 22                                                                | 5.90839550 03                                             |
| 730                                    | 740                                    | 2.24261640 22                                                                | 6.06210090 03                                             |
| 740                                    | 750                                    | 2.32854540 22                                                                | 6.20990380 03                                             |
| 750                                    | 760                                    | 2.41366580 22                                                                | 6.35166590 03                                             |
| 760                                    | 770                                    | 2.49784750 22                                                                | 6.48727890 03                                             |
| 770                                    | 780                                    | 2.58096350 22                                                                | 6.61666280 03                                             |
| 780                                    | 790                                    | 2.66289960 22                                                                | 6.73976390 03                                             |
| 790                                    | 800                                    | 2.74354920 22                                                                | 6.85655300 03                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 2.82281450 22                                                                | 6.96702380 03                                             |
| 810                                    | 820                                    | 2.90060590 22                                                                | 7.07119050 03                                             |
| 820                                    | 830                                    | 2.97684220 22                                                                | 7.16908660 03                                             |
| 830                                    | 840                                    | 3.05145010 22                                                                | 7.26076300 03                                             |
| 840                                    | 850                                    | 3.12436380 22                                                                | 7.34628610 03                                             |
| 850                                    | 860                                    | 3.19552530 22                                                                | 7.42573670 03                                             |
| 860                                    | 870                                    | 3.26488350 22                                                                | 7.49920820 03                                             |
| 870                                    | 880                                    | 3.33239420 22                                                                | 7.56680500 03                                             |
| 880                                    | 890                                    | 3.39801970 22                                                                | 7.62864160 03                                             |
| 890                                    | 900                                    | 3.46172830 22                                                                | 7.68484110 03                                             |
| 900                                    | 910                                    | 3.52349450 22                                                                | 7.73553400 03                                             |
| 910                                    | 920                                    | 3.58329810 22                                                                | 7.78085700 03                                             |
| 920                                    | 930                                    | 3.64112420 22                                                                | 7.82095230 03                                             |
| 930                                    | 940                                    | 3.69696260 22                                                                | 7.85596620 03                                             |
| 940                                    | 950                                    | 3.75080810 22                                                                | 7.88604860 03                                             |
| 950                                    | 960                                    | 3.80265940 22                                                                | 7.91135210 03                                             |
| 960                                    | 970                                    | 3.85251940 22                                                                | 7.93203110 03                                             |
| 970                                    | 980                                    | 3.90039460 22                                                                | 7.94824110 03                                             |
| 980                                    | 990                                    | 3.94629500 22                                                                | 7.96013840 03                                             |
| 990                                    | 1000                                   | 3.99023360 22                                                                | 7.96787920 03                                             |
| 1000                                   | 1010                                   | 4.03222660 22                                                                | 7.97161930 03                                             |
| 1010                                   | 1020                                   | 4.07219270 22                                                                | 7.97151350 03                                             |
| 1020                                   | 1030                                   | 4.11045280 22                                                                | 7.96771530 03                                             |
| 1030                                   | 1040                                   | 4.14673040 22                                                                | 7.96037650 03                                             |
| 1040                                   | 1050                                   | 4.18115080 22                                                                | 7.94964680 03                                             |
| 1050                                   | 1060                                   | 4.21374100 22                                                                | 7.93567370 03                                             |
| 1060                                   | 1070                                   | 4.24452970 22                                                                | 7.91860210 03                                             |
| 1070                                   | 1080                                   | 4.27354700 22                                                                | 7.89857400 03                                             |
| 1080                                   | 1090                                   | 4.30082430 22                                                                | 7.87572860 03                                             |
| 1090                                   | 1100                                   | 4.32639400 22                                                                | 7.85020200 03                                             |
| 1100                                   | 1110                                   | 4.35028950 22                                                                | 7.82212700 03                                             |
| 1110                                   | 1120                                   | 4.37254490 22                                                                | 7.79163300 03                                             |
| 1120                                   | 1130                                   | 4.39319520 22                                                                | 7.75884610 03                                             |
| 1130                                   | 1140                                   | 4.41227560 22                                                                | 7.72388880 03                                             |
| 1140                                   | 1150                                   | 4.42982210 22                                                                | 7.68688020 03                                             |
| 1150                                   | 1160                                   | 4.44587070 22                                                                | 7.64793580 03                                             |
| 1160                                   | 1170                                   | 4.46045780 22                                                                | 7.60716730 03                                             |
| 1170                                   | 1180                                   | 4.47362000 22                                                                | 7.56468320 03                                             |
| 1180                                   | 1190                                   | 4.48539380 22                                                                | 7.52058810 03                                             |
| 1190                                   | 1200                                   | 4.49581570 22                                                                | 7.47498340 03                                             |
| 1200                                   | 1210                                   | 4.50492230 22                                                                | 7.42796650 03                                             |
| 1210                                   | 1220                                   | 4.51274970 22                                                                | 7.37963190 03                                             |
| 1220                                   | 1230                                   | 4.51933410 22                                                                | 7.33007030 03                                             |
| 1230                                   | 1240                                   | 4.52471130 22                                                                | 7.27936900 03                                             |
| 1240                                   | 1250                                   | 4.52891670 22                                                                | 7.22761220 03                                             |
| 1250                                   | 1260                                   | 4.53198560 22                                                                | 7.17488080 03                                             |
| 1260                                   | 1270                                   | 4.53395250 22                                                                | 7.12125220 03                                             |
| 1270                                   | 1280                                   | 4.53485180 22                                                                | 7.06680120 03                                             |
| 1280                                   | 1290                                   | 4.53471740 22                                                                | 7.01159920 03                                             |
| 1290                                   | 1300                                   | 4.53358240 22                                                                | 6.95571470 03                                             |
| 1300                                   | 1310                                   | 4.53147970 22                                                                | 6.89921330 03                                             |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ |    | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |    |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|----|-----------------------------------------------------------|----|
| 1310                                   | 1320                                   | 4.52844160                                                                   | 22 | 6.84215770                                                | 03 |
| 1320                                   | 1330                                   | 4.52449970                                                                   | 22 | 6.78460820                                                | 03 |
| 1330                                   | 1340                                   | 4.51968520                                                                   | 22 | 6.72662200                                                | 03 |
| 1340                                   | 1350                                   | 4.51402850                                                                   | 22 | 6.66825400                                                | 03 |
| 1350                                   | 1360                                   | 4.50755960                                                                   | 22 | 6.60955650                                                | 03 |
| 1360                                   | 1370                                   | 4.50030780                                                                   | 22 | 6.55057940                                                | 03 |
| 1370                                   | 1380                                   | 4.49230170                                                                   | 22 | 6.49137030                                                | 03 |
| 1380                                   | 1390                                   | 4.48356950                                                                   | 22 | 6.43197430                                                | 03 |
| 1390                                   | 1400                                   | 4.47413840                                                                   | 22 | 6.37243470                                                | 03 |
| 1400                                   | 1410                                   | 4.46403550                                                                   | 22 | 6.31279240                                                | 03 |
| 1410                                   | 1420                                   | 4.45328670                                                                   | 22 | 6.25308620                                                | 03 |
| 1420                                   | 1430                                   | 4.44191770                                                                   | 22 | 6.19335330                                                | 03 |
| 1430                                   | 1440                                   | 4.42995340                                                                   | 22 | 6.13362860                                                | 03 |
| 1440                                   | 1450                                   | 4.41741820                                                                   | 22 | 6.07394540                                                | 03 |
| 1450                                   | 1460                                   | 4.40433550                                                                   | 22 | 6.01433510                                                | 03 |
| 1460                                   | 1470                                   | 4.39072860                                                                   | 22 | 5.95482760                                                | 03 |
| 1470                                   | 1480                                   | 4.37661990                                                                   | 22 | 5.89545110                                                | 03 |
| 1480                                   | 1490                                   | 4.36203130                                                                   | 22 | 5.83623200                                                | 03 |
| 1490                                   | 1500                                   | 4.34698400                                                                   | 22 | 5.77719560                                                | 03 |
| 1500                                   | 1510                                   | 4.33149870                                                                   | 22 | 5.71836550                                                | 03 |
| 1510                                   | 1520                                   | 4.31559550                                                                   | 22 | 5.65976400                                                | 03 |
| 1520                                   | 1530                                   | 4.29929390                                                                   | 22 | 5.60141200                                                | 03 |
| 1530                                   | 1540                                   | 4.28261290                                                                   | 22 | 5.54332920                                                | 03 |
| 1540                                   | 1550                                   | 4.26557100                                                                   | 22 | 5.48553400                                                | 03 |
| 1550                                   | 1560                                   | 4.24818600                                                                   | 22 | 5.42804380                                                | 03 |
| 1560                                   | 1570                                   | 4.23047520                                                                   | 22 | 5.37087480                                                | 03 |
| 1570                                   | 1580                                   | 4.21245550                                                                   | 22 | 5.31404200                                                | 03 |
| 1580                                   | 1590                                   | 4.19414330                                                                   | 22 | 5.25755950                                                | 03 |
| 1590                                   | 1600                                   | 4.17555420                                                                   | 22 | 5.20144050                                                | 03 |
| 1600                                   | 1610                                   | 4.15670370                                                                   | 22 | 5.14569720                                                | 03 |
| 1610                                   | 1620                                   | 4.13760660                                                                   | 22 | 5.09034080                                                | 03 |
| 1620                                   | 1630                                   | 4.11827730                                                                   | 22 | 5.03538170                                                | 03 |
| 1630                                   | 1640                                   | 4.09872970                                                                   | 22 | 4.98082970                                                | 03 |
| 1640                                   | 1650                                   | 4.07897720                                                                   | 22 | 4.92669350                                                | 03 |
| 1650                                   | 1660                                   | 4.05903300                                                                   | 22 | 4.87298130                                                | 03 |
| 1660                                   | 1670                                   | 4.03890960                                                                   | 22 | 4.81970040                                                | 03 |
| 1670                                   | 1680                                   | 4.01861920                                                                   | 22 | 4.76685770                                                | 03 |
| 1680                                   | 1690                                   | 3.99817360                                                                   | 22 | 4.71445910                                                | 03 |
| 1690                                   | 1700                                   | 3.97758420                                                                   | 22 | 4.66251030                                                | 03 |
| 1700                                   | 1710                                   | 3.95686200                                                                   | 22 | 4.61101610                                                | 03 |
| 1710                                   | 1720                                   | 3.93601760                                                                   | 22 | 4.55998080                                                | 03 |
| 1720                                   | 1730                                   | 3.91506130                                                                   | 22 | 4.50940840                                                | 03 |
| 1730                                   | 1740                                   | 3.89400300                                                                   | 22 | 4.45930210                                                | 03 |
| 1740                                   | 1750                                   | 3.87285230                                                                   | 22 | 4.40966490                                                | 03 |
| 1750                                   | 1760                                   | 3.85161840                                                                   | 22 | 4.36049910                                                | 03 |
| 1760                                   | 1770                                   | 3.83031010                                                                   | 22 | 4.31180670                                                | 03 |
| 1770                                   | 1780                                   | 3.80893610                                                                   | 22 | 4.26358950                                                | 03 |
| 1780                                   | 1790                                   | 3.78750460                                                                   | 22 | 4.21584850                                                | 03 |
| 1790                                   | 1800                                   | 3.76602360                                                                   | 22 | 4.16858460                                                | 03 |
| 1800                                   | 1810                                   | 3.74450080                                                                   | 22 | 4.12179840                                                | 03 |

R.K.H. Gebel. Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 1810                                           | 1820                                           | 3.72294360 22                                                                  | 4.07549000 03                                              |
| 1820                                           | 1830                                           | 3.70135900 22                                                                  | 4.02965940 03                                              |
| 1830                                           | 1840                                           | 3.67975390 22                                                                  | 3.98430610 03                                              |
| 1840                                           | 1850                                           | 3.65813490 22                                                                  | 3.93942940 03                                              |
| 1850                                           | 1860                                           | 3.63650830 22                                                                  | 3.89502850 03                                              |
| 1860                                           | 1870                                           | 3.61488030 22                                                                  | 3.85110220 03                                              |
| 1870                                           | 1880                                           | 3.59325670 22                                                                  | 3.80764910 03                                              |
| 1880                                           | 1890                                           | 3.57164300 22                                                                  | 3.76466750 03                                              |
| 1890                                           | 1900                                           | 3.55004470 22                                                                  | 3.72215570 03                                              |
| 1900                                           | 1910                                           | 3.52846700 22                                                                  | 3.68011170 03                                              |
| 1910                                           | 1920                                           | 3.50691490 22                                                                  | 3.63853330 03                                              |
| 1920                                           | 1930                                           | 3.48539300 22                                                                  | 3.59741810 03                                              |
| 1930                                           | 1940                                           | 3.46390610 22                                                                  | 3.55676380 03                                              |
| 1940                                           | 1950                                           | 3.44245840 22                                                                  | 3.51656750 03                                              |
| 1950                                           | 1960                                           | 3.42105420 22                                                                  | 3.47682670 03                                              |
| 1960                                           | 1970                                           | 3.39969740 22                                                                  | 3.43753840 03                                              |
| 1970                                           | 1980                                           | 3.37839200 22                                                                  | 3.39869960 03                                              |
| 1980                                           | 1990                                           | 3.35714160 22                                                                  | 3.36030720 03                                              |
| 1990                                           | 2000                                           | 3.33594980 22                                                                  | 3.32235790 03                                              |
| 2000                                           | 2010                                           | 3.31481980 22                                                                  | 3.28484850 03                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 2870^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 3.22090350 23                                                                  | 3.12314110 04                                              |
| 2100                                           | 2200                                           | 3.01749090 23                                                                  | 2.78974510 04                                              |
| 2200                                           | 2300                                           | 2.82370250 23                                                                  | 2.49449860 04                                              |
| 2300                                           | 2400                                           | 2.64063660 23                                                                  | 2.23345710 04                                              |
| 2400                                           | 2500                                           | 2.46875420 23                                                                  | 2.00280800 04                                              |
| 2500                                           | 2600                                           | 2.30809090 23                                                                  | 1.79900150 04                                              |
| 2600                                           | 2700                                           | 2.15839710 23                                                                  | 1.61881090 04                                              |
| 2700                                           | 2800                                           | 2.01924240 23                                                                  | 1.45934770 04                                              |
| 2800                                           | 2900                                           | 1.89008820 23                                                                  | 1.31805360 04                                              |
| 2900                                           | 3000                                           | 1.77033830 23                                                                  | 1.19267870 04                                              |
| 3000                                           | 3200                                           | 3.21595360 23                                                                  | 2.06331340 04                                              |
| 3200                                           | 3400                                           | 2.83446660 23                                                                  | 1.70817110 04                                              |
| 3400                                           | 3600                                           | 2.50681110 23                                                                  | 1.42426210 04                                              |
| 3600                                           | 3800                                           | 2.22485540 23                                                                  | 1.19564850 04                                              |
| 3800                                           | 4000                                           | 1.98158460 23                                                                  | 1.01023540 04                                              |
| 4000                                           | 4200                                           | 1.77104370 23                                                                  | 0.858805010 03                                             |
| 4200                                           | 4400                                           | 1.58822250 23                                                                  | 7.34293280 03                                              |
| 4400                                           | 4600                                           | 1.42892420 23                                                                  | 6.31252850 03                                              |
| 4600                                           | 4800                                           | 1.28963900 23                                                                  | 5.45455290 03                                              |
| 4800                                           | 5000                                           | 1.16743150 23                                                                  | 4.73596280 03                                              |
| 5000                                           | 5500                                           | 2.47486930 23                                                                  | 9.39059690 03                                              |
| 5500                                           | 6000                                           | 1.97516770 23                                                                  | 6.94010280 03                                              |
| 6000                                           | 6500                                           | 1.59980330 23                                                                  | 5.09537370 03                                              |
| 6500                                           | 7000                                           | 1.31288930 23                                                                  | 3.97082830 03                                              |
| 7000                                           | 7500                                           | 1.09010900 23                                                                  | 2.99172550 03                                              |
| 7500                                           | 8000                                           | 9.14652790 22                                                                  | 2.34785420 03                                              |
| 8000                                           | 8500                                           | 7.74687850 22                                                                  | 1.86778970 03                                              |
| 8500                                           | 9000                                           | 6.61731560 22                                                                  | 1.50410200 03                                              |
| 9000                                           | 9500                                           | 5.69606870 22                                                                  | 1.22459670 03                                              |
| 9500                                           | 10000                                          | 4.93747730 22                                                                  | 1.00698380 03                                              |
| 10000                                          | 11000                                          | 8.08696280 22                                                                  | 1.53459320 03                                              |
| 11000                                          | 12000                                          | 6.29087280 22                                                                  | 1.08946210 03                                              |
| 12000                                          | 13000                                          | 4.98858750 22                                                                  | 7.94534480 02                                              |
| 13000                                          | 14000                                          | 4.02173640 22                                                                  | 5.92929560 02                                              |
| 14000                                          | 15000                                          | 3.28908360 22                                                                  | 4.51369280 02                                              |
| 15000                                          | 16000                                          | 2.72389690 22                                                                  | 3.49626070 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6200^\circ\text{K}^{\circ}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 300                                            | 310                                            | 3.43790220 23                                                                  | 2.23902960 05                                              |
| 310                                            | 320                                            | 3.84756990 23                                                                  | 2.42637110 05                                              |
| 320                                            | 330                                            | 4.25983310 23                                                                  | 2.60377500 05                                              |
| 330                                            | 340                                            | 4.67071450 23                                                                  | 2.76977130 05                                              |
| 340                                            | 350                                            | 5.07660060 23                                                                  | 2.92326990 05                                              |
| 350                                            | 360                                            | 5.47427650 23                                                                  | 3.06352700 05                                              |
| 360                                            | 370                                            | 5.86094280 23                                                                  | 3.19010650 05                                              |
| 370                                            | 380                                            | 6.23421530 23                                                                  | 3.30283870 05                                              |
| 380                                            | 390                                            | 6.59211340 23                                                                  | 3.40178020 05                                              |
| 390                                            | 400                                            | 6.93303930 23                                                                  | 3.48717420 05                                              |
| 400                                            | 410                                            | 7.25575160 23                                                                  | 3.55941490 05                                              |
| 410                                            | 420                                            | 7.55933430 23                                                                  | 3.61901460 05                                              |
| 420                                            | 430                                            | 7.84316510 23                                                                  | 3.66657430 05                                              |
| 430                                            | 440                                            | 8.10688180 23                                                                  | 3.70275900 05                                              |
| 440                                            | 450                                            | 8.35035040 23                                                                  | 3.72827550 05                                              |
| 450                                            | 460                                            | 8.57263380 23                                                                  | 3.74385470 05                                              |
| 460                                            | 470                                            | 8.77696230 23                                                                  | 3.75027620 05                                              |
| 470                                            | 480                                            | 8.96070710 23                                                                  | 3.74815600 05                                              |
| 480                                            | 490                                            | 9.12535510 23                                                                  | 3.73833730 05                                              |
| 490                                            | 500                                            | 9.27148710 23                                                                  | 3.72148190 05                                              |
| 500                                            | 510                                            | 9.39975720 23                                                                  | 3.69826550 05                                              |
| 510                                            | 520                                            | 9.51087610 23                                                                  | 3.66933280 05                                              |
| 520                                            | 530                                            | 9.60559510 23                                                                  | 3.63529480 05                                              |
| 530                                            | 540                                            | 9.68469310 23                                                                  | 3.59672710 05                                              |
| 540                                            | 550                                            | 9.74896540 23                                                                  | 3.55416900 05                                              |
| 550                                            | 560                                            | 9.79921350 23                                                                  | 3.50812330 05                                              |
| 560                                            | 570                                            | 9.83623730 23                                                                  | 3.45905640 05                                              |
| 570                                            | 580                                            | 9.86082840 23                                                                  | 3.40739960 05                                              |
| 580                                            | 590                                            | 9.87376430 23                                                                  | 3.35354980 05                                              |
| 590                                            | 600                                            | 9.87580410 23                                                                  | 3.29787110 05                                              |
| 600                                            | 610                                            | 9.86768490 23                                                                  | 3.24069630 05                                              |
| 610                                            | 620                                            | 9.85011920 23                                                                  | 3.18232850 05                                              |
| 620                                            | 630                                            | 9.82379260 23                                                                  | 3.12304320 05                                              |
| 630                                            | 640                                            | 9.78936260 23                                                                  | 3.06308920 05                                              |
| 640                                            | 650                                            | 9.74745760 23                                                                  | 3.00269150 05                                              |
| 650                                            | 660                                            | 9.69867630 23                                                                  | 2.94205190 05                                              |
| 660                                            | 670                                            | 9.64358780 23                                                                  | 2.88135130 05                                              |
| 670                                            | 680                                            | 9.58273130 23                                                                  | 2.82075130 05                                              |
| 680                                            | 690                                            | 9.51661690 23                                                                  | 2.76039540 05                                              |
| 690                                            | 700                                            | 9.44572600 23                                                                  | 2.70041070 05                                              |
| 700                                            | 710                                            | 9.37051190 23                                                                  | 2.64090920 05                                              |
| 710                                            | 720                                            | 9.29140100 23                                                                  | 2.58198910 05                                              |
| 720                                            | 730                                            | 9.20879330 23                                                                  | 2.52373600 05                                              |
| 730                                            | 740                                            | 9.12306370 23                                                                  | 2.46622410 05                                              |
| 740                                            | 750                                            | 9.03456300 23                                                                  | 2.40951690 05                                              |
| 750                                            | 760                                            | 8.94361860 23                                                                  | 2.35366890 05                                              |
| 760                                            | 770                                            | 8.85053630 23                                                                  | 2.29872550 05                                              |
| 770                                            | 780                                            | 8.75560070 23                                                                  | 2.24472500 05                                              |
| 780                                            | 790                                            | 8.65907650 23                                                                  | 2.19169810 05                                              |
| 790                                            | 800                                            | 8.56120990 23                                                                  | 2.13966970 05                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 6200^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 800                                    | 810                                    | 8.46222880 23                                                                | 2.08855890 05                                             |
| 810                                    | 820                                    | 8.36234480 23                                                                | 2.03867970 05                                             |
| 820                                    | 830                                    | 8.26175350 23                                                                | 1.98974180 05                                             |
| 830                                    | 840                                    | 8.16063540 23                                                                | 1.94185070 05                                             |
| 840                                    | 850                                    | 8.05915740 23                                                                | 1.89500850 05                                             |
| 850                                    | 860                                    | 7.95747280 23                                                                | 1.84921400 05                                             |
| 860                                    | 870                                    | 7.85572310 23                                                                | 1.80446340 05                                             |
| 870                                    | 880                                    | 7.75403770 23                                                                | 1.76075030 05                                             |
| 880                                    | 890                                    | 7.65253580 23                                                                | 1.71806620 05                                             |
| 890                                    | 900                                    | 7.55132590 23                                                                | 1.67640080 05                                             |
| 900                                    | 910                                    | 7.45050750 23                                                                | 1.63574220 05                                             |
| 910                                    | 920                                    | 7.35017110 23                                                                | 1.59607690 05                                             |
| 920                                    | 930                                    | 7.25039910 23                                                                | 1.55739060 05                                             |
| 930                                    | 940                                    | 7.15126620 23                                                                | 1.51966750 05                                             |
| 940                                    | 950                                    | 7.05284000 23                                                                | 1.48289140 05                                             |
| 950                                    | 960                                    | 6.95518130 23                                                                | 1.44704520 05                                             |
| 960                                    | 970                                    | 6.85834500 23                                                                | 1.41211130 05                                             |
| 970                                    | 980                                    | 6.76238020 23                                                                | 1.37807160 05                                             |
| 980                                    | 990                                    | 6.66733060 23                                                                | 1.34490760 05                                             |
| 990                                    | 1000                                   | 6.57323510 23                                                                | 1.31260080 05                                             |
| 1000                                   | 1010                                   | 6.48012790 23                                                                | 1.28113240 05                                             |
| 1010                                   | 1020                                   | 6.38803920 23                                                                | 1.25048330 05                                             |
| 1020                                   | 1030                                   | 6.29699500 23                                                                | 1.22063480 05                                             |
| 1030                                   | 1040                                   | 6.20701780 23                                                                | 1.19156800 05                                             |
| 1040                                   | 1050                                   | 6.11812700 23                                                                | 1.16326390 05                                             |
| 1050                                   | 1060                                   | 6.03033850 23                                                                | 1.13570410 05                                             |
| 1060                                   | 1070                                   | 5.94366560 23                                                                | 1.10887000 05                                             |
| 1070                                   | 1080                                   | 5.85811900 23                                                                | 1.08274330 05                                             |
| 1080                                   | 1090                                   | 5.77370700 23                                                                | 1.05730600 05                                             |
| 1090                                   | 1100                                   | 5.69043550 23                                                                | 1.03254020 05                                             |
| 1100                                   | 1110                                   | 5.60830850 23                                                                | 1.00842850 05                                             |
| 1110                                   | 1120                                   | 5.52732820 23                                                                | 9.84953610 04                                             |
| 1120                                   | 1130                                   | 5.44749500 23                                                                | 9.62098670 04                                             |
| 1130                                   | 1140                                   | 5.36880770 23                                                                | 9.39847070 04                                             |
| 1140                                   | 1150                                   | 5.29126380 23                                                                | 9.18182570 04                                             |
| 1150                                   | 1160                                   | 5.21485940 23                                                                | 8.97089240 04                                             |
| 1160                                   | 1170                                   | 5.13958960 23                                                                | 8.76551530 04                                             |
| 1170                                   | 1180                                   | 5.06544800 23                                                                | 8.56554200 04                                             |
| 1180                                   | 1190                                   | 4.99242770 23                                                                | 8.37082390 04                                             |
| 1190                                   | 1200                                   | 4.92052080 23                                                                | 8.18121580 04                                             |
| 1200                                   | 1210                                   | 4.84971830 23                                                                | 7.99657600 04                                             |
| 1210                                   | 1220                                   | 4.78001100 23                                                                | 7.81676640 04                                             |
| 1220                                   | 1230                                   | 4.71138860 23                                                                | 7.64165240 04                                             |
| 1230                                   | 1240                                   | 4.64384050 23                                                                | 7.47110260 04                                             |
| 1240                                   | 1250                                   | 4.57735560 23                                                                | 7.30498920 04                                             |
| 1250                                   | 1260                                   | 4.51192210 23                                                                | 7.14318790 04                                             |
| 1260                                   | 1270                                   | 4.44752820 23                                                                | 6.98557750 04                                             |
| 1270                                   | 1280                                   | 4.38416140 23                                                                | 6.83204010 04                                             |
| 1280                                   | 1290                                   | 4.32180920 23                                                                | 6.68246110 04                                             |
| 1290                                   | 1300                                   | 4.26045860 23                                                                | 6.53672910 04                                             |
| 1300                                   | 1310                                   | 4.20009660 23                                                                | 6.39473570 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 6200^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1310                                   | 1320                                   | 4.14070980 23                                                                | 6.25637550 04                                             |
| 1320                                   | 1330                                   | 4.08228490 23                                                                | 6.12154610 04                                             |
| 1330                                   | 1340                                   | 4.02480830 23                                                                | 5.99014820 04                                             |
| 1340                                   | 1350                                   | 3.96826660 23                                                                | 5.86208500 04                                             |
| 1350                                   | 1360                                   | 3.91264590 23                                                                | 5.73726280 04                                             |
| 1360                                   | 1370                                   | 3.85793270 23                                                                | 5.61559040 04                                             |
| 1370                                   | 1380                                   | 3.80411320 23                                                                | 5.49697920 04                                             |
| 1380                                   | 1390                                   | 3.75117370 23                                                                | 5.38134340 04                                             |
| 1390                                   | 1400                                   | 3.69910070 23                                                                | 5.26859950 04                                             |
| 1400                                   | 1410                                   | 3.64788050 23                                                                | 5.15866650 04                                             |
| 1410                                   | 1420                                   | 3.59749950 23                                                                | 5.05146590 04                                             |
| 1420                                   | 1430                                   | 3.54794440 23                                                                | 4.94692120 04                                             |
| 1430                                   | 1440                                   | 3.49920160 23                                                                | 4.84495860 04                                             |
| 1440                                   | 1450                                   | 3.45125800 23                                                                | 4.74550600 04                                             |
| 1450                                   | 1460                                   | 3.40410040 23                                                                | 4.64849370 04                                             |
| 1460                                   | 1470                                   | 3.35771560 23                                                                | 4.55385410 04                                             |
| 1470                                   | 1480                                   | 3.31209080 23                                                                | 4.46152150 04                                             |
| 1480                                   | 1490                                   | 3.26721320 23                                                                | 4.37143210 04                                             |
| 1490                                   | 1500                                   | 3.22307010 23                                                                | 4.28352420 04                                             |
| 1500                                   | 1510                                   | 3.17964890 23                                                                | 4.19773760 04                                             |
| 1510                                   | 1520                                   | 3.13693740 23                                                                | 4.11401410 04                                             |
| 1520                                   | 1530                                   | 3.09492320 23                                                                | 4.03229730 04                                             |
| 1530                                   | 1540                                   | 3.05359440 23                                                                | 3.95253230 04                                             |
| 1540                                   | 1550                                   | 3.01293900 23                                                                | 3.87466590 04                                             |
| 1550                                   | 1560                                   | 2.97294530 23                                                                | 3.79864650 04                                             |
| 1560                                   | 1570                                   | 2.93360170 23                                                                | 3.72442400 04                                             |
| 1570                                   | 1580                                   | 2.89489680 23                                                                | 3.65194970 04                                             |
| 1580                                   | 1590                                   | 2.85681940 23                                                                | 3.58117650 04                                             |
| 1590                                   | 1600                                   | 2.81935830 23                                                                | 3.51205870 04                                             |
| 1600                                   | 1610                                   | 2.78250280 23                                                                | 3.44455160 04                                             |
| 1610                                   | 1620                                   | 2.74624210 23                                                                | 3.37861240 04                                             |
| 1620                                   | 1630                                   | 2.71056550 23                                                                | 3.31419900 04                                             |
| 1630                                   | 1640                                   | 2.67546280 23                                                                | 3.25127080 04                                             |
| 1640                                   | 1650                                   | 2.64092370 23                                                                | 3.18978850 04                                             |
| 1650                                   | 1660                                   | 2.60693810 23                                                                | 3.12971380 04                                             |
| 1660                                   | 1670                                   | 2.57349610 23                                                                | 3.07100940 04                                             |
| 1670                                   | 1680                                   | 2.54058820 23                                                                | 3.01363940 04                                             |
| 1680                                   | 1690                                   | 2.50820460 23                                                                | 2.95756860 04                                             |
| 1690                                   | 1700                                   | 2.47633600 23                                                                | 2.90276320 04                                             |
| 1700                                   | 1710                                   | 2.44497310 23                                                                | 2.84919000 04                                             |
| 1710                                   | 1720                                   | 2.41410700 23                                                                | 2.79681700 04                                             |
| 1720                                   | 1730                                   | 2.38372870 23                                                                | 2.74561320 04                                             |
| 1730                                   | 1740                                   | 2.35382950 23                                                                | 2.69554820 04                                             |
| 1740                                   | 1750                                   | 2.32440070 23                                                                | 2.64659280 04                                             |
| 1750                                   | 1760                                   | 2.29543400 23                                                                | 2.59871830 04                                             |
| 1760                                   | 1770                                   | 2.26692110 23                                                                | 2.55189710 04                                             |
| 1770                                   | 1780                                   | 2.23885370 23                                                                | 2.50610240 04                                             |
| 1780                                   | 1790                                   | 2.21122410 23                                                                | 2.46130790 04                                             |
| 1790                                   | 1800                                   | 2.18402430 23                                                                | 2.41748830 04                                             |
| 1800                                   | 1810                                   | 2.15724650 23                                                                | 2.37461890 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$  .

$T = 6200^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9}$ m | $\lambda_{\max}$<br>$\times 10^{-9}$ m | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{m}^{-2} \text{sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{sr}^{-1}$ |
|----------------------------------------|----------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------|
| 1810                                   | 1820                                   | 2.13088340 23                                                                | 2.33267570 04                                             |
| 1820                                   | 1830                                   | 2.10492750 23                                                                | 2.29163550 04                                             |
| 1830                                   | 1840                                   | 2.07937150 23                                                                | 2.25147560 04                                             |
| 1840                                   | 1850                                   | 2.05420820 23                                                                | 2.21217400 04                                             |
| 1850                                   | 1860                                   | 2.02943070 23                                                                | 2.17370940 04                                             |
| 1860                                   | 1870                                   | 2.00503220 23                                                                | 2.13606100 04                                             |
| 1870                                   | 1880                                   | 1.98100580 23                                                                | 2.09920850 04                                             |
| 1880                                   | 1890                                   | 1.95734500 23                                                                | 2.06313240 04                                             |
| 1890                                   | 1900                                   | 1.93404320 23                                                                | 2.02781350 04                                             |
| 1900                                   | 1910                                   | 1.91109420 23                                                                | 1.99323330 04                                             |
| 1910                                   | 1920                                   | 1.88849170 23                                                                | 1.95937380 04                                             |
| 1920                                   | 1930                                   | 1.86622960 23                                                                | 1.92621730 04                                             |
| 1930                                   | 1940                                   | 1.84430170 23                                                                | 1.89374690 04                                             |
| 1940                                   | 1950                                   | 1.82270240 23                                                                | 1.86194590 04                                             |
| 1950                                   | 1960                                   | 1.80142580 23                                                                | 1.83079820 04                                             |
| 1960                                   | 1970                                   | 1.78046610 23                                                                | 1.80028810 04                                             |
| 1970                                   | 1980                                   | 1.75981800 23                                                                | 1.77040030 04                                             |
| 1980                                   | 1990                                   | 1.73947580 23                                                                | 1.74111990 04                                             |
| 1990                                   | 2000                                   | 1.71943440 23                                                                | 1.71243250 04                                             |
| 2000                                   | 2010                                   | 1.69968830 23                                                                | 1.68432410 04                                             |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$ .

$T = 6200^\circ\text{K}$

| $\lambda_{\min}$<br>$\times 10^{-9} \text{ m}$ | $\lambda_{\max}$<br>$\times 10^{-9} \text{ m}$ | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1} \text{ m}^{-2} \text{ sr}^{-1}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2} \text{ sr}^{-1}$ |
|------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------|
| 2000                                           | 2100                                           | 1.61545950 24                                                                  | 1.56673840 05                                              |
| 2100                                           | 2200                                           | 1.44451730 24                                                                  | 1.33572040 05                                              |
| 2200                                           | 2300                                           | 1.29625380 24                                                                  | 1.14529720 05                                              |
| 2300                                           | 2400                                           | 1.16714740 24                                                                  | 9.87302350 04                                              |
| 2400                                           | 2500                                           | 1.05428530 24                                                                  | 8.55398420 04                                              |
| 2500                                           | 2600                                           | 9.55255570 23                                                                  | 7.44630280 04                                              |
| 2600                                           | 2700                                           | 8.68045490 23                                                                  | 6.51095530 04                                              |
| 2700                                           | 2800                                           | 7.90977630 23                                                                  | 5.71699360 04                                              |
| 2800                                           | 2900                                           | 7.22644960 23                                                                  | 5.03970990 04                                              |
| 2900                                           | 3000                                           | 6.61863530 23                                                                  | 4.45925260 04                                              |
| 3000                                           | 3200                                           | 1.16673960 24                                                                  | 7.48719910 04                                              |
| 3200                                           | 3400                                           | 9.91942840 23                                                                  | 5.97888440 04                                              |
| 3400                                           | 3600                                           | 8.50120620 23                                                                  | 4.83069480 04                                              |
| 3600                                           | 3800                                           | 7.33913170 23                                                                  | 3.94454740 04                                              |
| 3800                                           | 4000                                           | 6.37830010 23                                                                  | 3.25205420 04                                              |
| 4000                                           | 4200                                           | 5.57723910 23                                                                  | 2.70471210 04                                              |
| 4200                                           | 4400                                           | 4.90425660 23                                                                  | 2.26758040 04                                              |
| 4400                                           | 4600                                           | 4.33487110 23                                                                  | 1.91512630 04                                              |
| 4600                                           | 4800                                           | 3.84997970 23                                                                  | 1.62844470 04                                              |
| 4800                                           | 5000                                           | 3.43453600 23                                                                  | 1.39336710 04                                              |
| 5000                                           | 5500                                           | 7.12295490 23                                                                  | 2.70336610 04                                              |
| 5500                                           | 6000                                           | 5.53112180 23                                                                  | 1.91579690 04                                              |
| 6000                                           | 6500                                           | 4.37964190 23                                                                  | 1.39510740 04                                              |
| 6500                                           | 7000                                           | 3.52641800 23                                                                  | 1.03981560 04                                              |
| 7000                                           | 7500                                           | 2.88093100 23                                                                  | 7.90719390 03                                              |
| 7500                                           | 8000                                           | 2.38368600 23                                                                  | 6.11919330 03                                              |
| 8000                                           | 8500                                           | 1.99449640 23                                                                  | 4.80905100 03                                              |
| 8500                                           | 9000                                           | 1.68555940 23                                                                  | 3.83142410 03                                              |
| 9000                                           | 9500                                           | 1.43722630 23                                                                  | 3.09001390 03                                              |
| 9500                                           | 10000                                          | 1.23534580 23                                                                  | 2.51953670 03                                              |
| 10000                                          | 11000                                          | 2.00168250 23                                                                  | 3.79883170 03                                              |
| 11000                                          | 12000                                          | 1.53779110 23                                                                  | 2.66338550 03                                              |
| 12000                                          | 13000                                          | 1.20634670 23                                                                  | 1.92227110 03                                              |
| 13000                                          | 14000                                          | 9.64440990 22                                                                  | 1.42195800 03                                              |
| 14000                                          | 15000                                          | 7.82840180 22                                                                  | 1.07435430 03                                              |
| 15000                                          | 16000                                          | 6.44114610 22                                                                  | 8.26780860 02                                              |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 8.5 $\mu\text{m}$  to 11.0 $\mu\text{m}$

| T     | $Q_{0,\Delta\lambda}$                             |    | $\text{Log}_{10} Q_{0,\Delta\lambda}$ |    | $N_{0,\Delta\lambda}$           |                | $\text{Log}_{10} N_{0,\Delta\lambda}$ |    |
|-------|---------------------------------------------------|----|---------------------------------------|----|---------------------------------|----------------|---------------------------------------|----|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |    |                                       |    | $\text{W m}^{-2}\text{sr}^{-1}$ |                |                                       |    |
| 50    | 8.0834258E                                        | 10 | 1.0907595E                            | 01 | 1.5198065E-09                   | -8.8182117E    | 00                                    |    |
| 100   | 8.0764829E                                        | 16 | 1.6907222E                            | 01 | 1.5720068E-03                   | -2.8035456E    | 00                                    |    |
| 150   | 9.2918901E                                        | 18 | 1.8968104E                            | 01 | 1.8464945E-01                   | -7.3365198E-01 |                                       |    |
| 200   | 1.0393264E                                        | 20 | 2.0016334E                            | 01 | 2.0387568E                      | 00             | 3.1988787E-01                         |    |
| 250   | 4.4922768E                                        | 20 | 2.0652466E                            | 01 | 9.1072010E                      | 00             | 9.5938492E-01                         |    |
| 300   | 1.2043311E                                        | 21 | 2.1080746E                            | 01 | 2.4543598E                      | 01             | 1.3899383E                            | 00 |
| 350   | 2.4539725E                                        | 21 | 2.1399870E                            | 01 | 5.0196941E                      | 01             | 1.7006773E                            | 00 |
| 400   | 4.2122046E                                        | 21 | 2.1624509E                            | 01 | 8.6399202E                      | 01             | 1.9365098E                            | 00 |
| 450   | 6.4498190E                                        | 21 | 2.1809548E                            | 01 | 1.3257345E                      | 02             | 2.1224566E                            | 00 |
| 500   | 9.1181089E                                        | 21 | 2.1959905E                            | 01 | 1.8772594E                      | 02             | 2.2735243E                            | 00 |
| 600   | 1.5534051E                                        | 22 | 2.2191285E                            | 01 | 3.2057834E                      | 02             | 2.5059342E                            | 00 |
| 700   | 2.3073546E                                        | 22 | 2.2363114E                            | 01 | 4.7694338E                      | 02             | 2.6784669E                            | 00 |
| 800   | 3.1439670E                                        | 22 | 2.2497478E                            | 01 | 6.5063366E                      | 02             | 2.8133366E                            | 00 |
| 900   | 4.0419372E                                        | 22 | 2.2606589E                            | 01 | 8.3719707E                      | 02             | 2.9228277E                            | 00 |
| 1000  | 4.9861728E                                        | 22 | 2.2697767E                            | 01 | 1.0334741E                      | 03             | 3.0142996E                            | 00 |
| 1500  | 1.0111305E                                        | 23 | 2.3004807E                            | 01 | 2.0997444E                      | 03             | 3.3221664E                            | 00 |
| 2000  | 1.5563079E                                        | 23 | 2.3192095E                            | 01 | 3.2347047E                      | 03             | 3.5098347E                            | 00 |
| 2500  | 2.1153334E                                        | 23 | 2.3325379E                            | 01 | 4.3988032E                      | 03             | 3.6433346E                            | 00 |
| 3000  | 2.6814533E                                        | 23 | 2.3428370E                            | 01 | 5.5778329E                      | 03             | 3.7464655E                            | 00 |
| 3500  | 3.2516785E                                        | 23 | 2.3512108E                            | 01 | 6.7655038E                      | 03             | 3.8303002E                            | 00 |
| 4000  | 3.8244885E                                        | 23 | 2.3582573E                            | 01 | 7.9586158E                      | 03             | 3.9008376E                            | 00 |
| 4500  | 4.3990297E                                        | 23 | 2.3643357E                            | 01 | 9.1553723E                      | 03             | 3.9616761E                            | 00 |
| 5000  | 4.9747868E                                        | 23 | 2.3696774E                            | 01 | 1.0354688E                      | 04             | 4.0151371E                            | 00 |
| 6000  | 6.1287390E                                        | 23 | 2.3787371E                            | 01 | 1.2758454E                      | 04             | 4.1057981E                            | 00 |
| 7000  | 7.2847858E                                        | 23 | 2.3862417E                            | 01 | 1.5166629E                      | 04             | 4.1808891E                            | 00 |
| 8000  | 8.4421442E                                        | 23 | 2.3926453E                            | 01 | 1.7577565E                      | 04             | 4.2449588E                            | 00 |
| 9000  | 9.6003779E                                        | 23 | 2.3982288E                            | 01 | 1.9990344E                      | 04             | 4.3008203E                            | 00 |
| 10000 | 1.0759225E                                        | 24 | 2.4031781E                            | 01 | 2.2404415E                      | 04             | 4.3503336E                            | 00 |
|       |                                                   |    |                                       |    |                                 |                |                                       |    |
| 290   | 1.0152893E                                        | 21 | 2.1006590E                            | 01 | 2.0672364E                      | 01             | 1.3153901E                            | 00 |
| 295   | 1.1073307E                                        | 21 | 2.1044277E                            | 01 | 2.2556777E                      | 01             | 1.3532771E                            | 00 |
| 299   | 1.1845320E                                        | 21 | 2.1073547E                            | 01 | 2.4137990E                      | 01             | 1.3827011E                            | 00 |
| 300   | 1.2043311E                                        | 21 | 2.1080746E                            | 01 | 2.4543598E                      | 01             | 1.3899383E                            | 00 |
| 301   | 1.2243305E                                        | 21 | 2.1087899E                            | 01 | 2.4953343E                      | 01             | 1.3971287E                            | 00 |
| 305   | 1.3063373E                                        | 21 | 2.1116055E                            | 01 | 2.6633843E                      | 01             | 1.4254338E                            | 00 |
| 310   | 1.4133886E                                        | 21 | 2.1150261E                            | 01 | 2.8828373E                      | 01             | 1.4598201E                            | 00 |
| 2040  | 1.6006500E                                        | 23 | 2.3204296E                            | 01 | 3.3270330E                      | 03             | 3.5220571E                            | 00 |
| 2870  | 2.5337821E                                        | 23 | 2.3403769E                            | 01 | 5.2702748E                      | 03             | 3.7218333E                            | 00 |
| 5600  | 5.6668442E                                        | 23 | 2.3753341E                            | 01 | 1.1796287E                      | 04             | 4.0717454E                            | 00 |
| 6100  | 6.2442663E                                        | 23 | 2.3795481E                            | 01 | 1.2999108E                      | 04             | 4.1139136E                            | 00 |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 3.35 $\mu$ m to 4.60 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50      | 0.                                                                               |                                         | 0.                                                          |                                         |
| 100     | 5.4699001E 09                                                                    | 9.7379794E 00                           | 2.4429245E-10                                               | -9.6120901E 00                          |
| 150     | 2.8545935E 14                                                                    | 1.4455544E 01                           | 1.2974000E-05                                               | -4.8869262E 00                          |
| 200     | 7.1826563E 16                                                                    | 1.6856285E 01                           | 3.3197829E-03                                               | -2.4788903E 00                          |
| 250     | 2.0904274E 18                                                                    | 1.8320235E 01                           | 9.8073232E-02                                               | -1.0084495E 00                          |
| 300     | 2.0415001E 19                                                                    | 1.9309949E 01                           | 9.6999071E-01                                               | -1.3232426E-02                          |
| 350     | 1.0597783E 20                                                                    | 2.0025215E 01                           | 5.0886340E 00                                               | 7.0660121E-01                           |
| 400     | 3.6890079E 20                                                                    | 2.0566910E 01                           | 1.7867749E 01                                               | 1.2520699E 00                           |
| 450     | 9.8102349E 20                                                                    | 2.0991679E 01                           | 4.7859531E 01                                               | 1.6799684E 00                           |
| 500     | 2.1571335E 21                                                                    | 2.1333877E 01                           | 1.0587125E 02                                               | 2.0247781E 00                           |
| 600     | 7.1065380E 21                                                                    | 2.1851658E 01                           | 3.5206619E 02                                               | 2.5466243E 00                           |
| 700     | 1.6806241E 22                                                                    | 2.2225471E 01                           | 8.3832422E 02                                               | 2.9234121E 00                           |
| 800     | 3.2263530E 22                                                                    | 2.2508712E 01                           | 1.6176934E 03                                               | 3.2088962E 00                           |
| 900     | 5.3871354E 22                                                                    | 2.2731358E 01                           | 2.7119188E 03                                               | 3.4332767E 00                           |
| 1000    | 8.1566749E 22                                                                    | 2.2911513E 01                           | 4.1191036E 03                                               | 3.6148027E 00                           |
| 1500    | 2.9637541E 23                                                                    | 2.3471842E 01                           | 1.5102841E 04                                               | 4.1790587E 00                           |
| 2000    | 5.9642904E 23                                                                    | 2.3775559E 01                           | 3.0518814E 04                                               | 4.4845676E 00                           |
| 2500    | 9.4314875E 23                                                                    | 2.3974589E 01                           | 4.8372278E 04                                               | 4.6845965E 00                           |
| 3000    | 1.3167800E 24                                                                    | 2.4119513E 01                           | 6.7631466E 04                                               | 4.8301489E 00                           |
| 3500    | 1.7069404E 24                                                                    | 2.4232218E 01                           | 8.7757305E 04                                               | 4.9432833E 00                           |
| 4000    | 2.1079153E 24                                                                    | 2.4323853E 01                           | 1.0844984E 05                                               | 5.0352289E 00                           |
| 4500    | 2.5163094E 24                                                                    | 2.4400764E 01                           | 1.2953132E 05                                               | 5.1123748E 00                           |
| 5000    | 2.9299995E 24                                                                    | 2.4466867E 01                           | 1.5089051E 05                                               | 5.1786619E 00                           |
| 6000    | 3.7681501E 24                                                                    | 2.4576128E 01                           | 1.9417380E 05                                               | 5.2881907E 00                           |
| 7000    | 4.6156619E 24                                                                    | 2.4664234E 01                           | 2.3794821E 05                                               | 5.3764825E 00                           |
| 8000    | 5.4690918E 24                                                                    | 2.4737915E 01                           | 2.8203313E 05                                               | 5.4503002E 00                           |
| 9000    | 6.3264961E 24                                                                    | 2.4801163E 01                           | 3.2632662E 05                                               | 5.5136525E 00                           |
| 10000   | 7.1866964E 24                                                                    | 2.4856529E 01                           | 3.7076683E 05                                               | 5.5691009E 00                           |
| 290     | 1.3752895E 19                                                                    | 1.9138394E 01                           | 6.5191389E-01                                               | -1.8580977E-01                          |
| 295     | 1.6810285E 19                                                                    | 1.9225575E 01                           | 7.9778705E-01                                               | -9.8113015E-02                          |
| 299     | 1.9646829E 19                                                                    | 1.9293292E 01                           | 9.3327609E-01                                               | -2.9989855E-02                          |
| 300     | 2.0415001E 19                                                                    | 1.9309949E 01                           | 9.6999071E-01                                               | -1.3232426E-02                          |
| 301     | 2.1207989E 19                                                                    | 1.9326500E 01                           | 1.0079008E 00                                               | 3.4177725E-03                           |
| 305     | 2.4640633E 19                                                                    | 1.9391652E 01                           | 1.1721060E 00                                               | 6.8966877E-02                           |
| 310     | 2.9567093E 19                                                                    | 1.9470809E 01                           | 1.4080278E 00                                               | 1.4861123E-01                           |
| 2040    | 6.2280173E 23                                                                    | 2.3794350E 01                           | 3.1875670E 04                                               | 4.5034593E 00                           |
| 2870    | 1.2177384E 24                                                                    | 2.4085554E 01                           | 6.2524466E 04                                               | 4.7960501E 00                           |
| 5600    | 3.4314939E 24                                                                    | 2.4535483E 01                           | 1.7678726E 05                                               | 5.2474510E 00                           |
| 6100    | 3.8525539E 24                                                                    | 2.4585749E 01                           | 1.9853302E 05                                               | 5.2978323E 00                           |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 3.4 $\mu$ m to 4.0 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 6.5628437E 07                                     | 7.8170921E 00                         | 3.3545327E-12                   | -1.1474368E 01                        |
| 150   | 1.6023658E 13                                     | 1.3204762E 01                         | 8.2903334E-07                   | -6.0814281E 00                        |
| 200   | 8.4827824E 15                                     | 1.5928538E 01                         | 4.4290399E-04                   | -3.3536904E 00                        |
| 250   | 3.7661297E 17                                     | 1.7575895E 01                         | 1.9793877E-02                   | -1.7034691E 00                        |
| 300   | 4.7916031E 18                                     | 1.8680481E 01                         | 2.5305891E-01                   | -5.9677837E-01                        |
| 350   | 2.9706548E 19                                     | 1.9472852E 01                         | 1.5746452E 00                   | 1.9718272E-01                         |
| 400   | 1.1724310E 20                                     | 2.0069087E 01                         | 6.2323396E 00                   | 7.9465111E-01                         |
| 450   | 3.4201867E 20                                     | 2.0534050E 01                         | 1.8221695E 01                   | 1.2605935E 00                         |
| 500   | 8.0695813E 20                                     | 2.0906851E 01                         | 4.3071434E 01                   | 1.6341894E 00                         |
| 600   | 2.9354949E 21                                     | 2.1467681E 01                         | 1.5711727E 02                   | 2.1962240E 00                         |
| 700   | 7.4116547E 21                                     | 2.1869915E 01                         | 3.9748527E 02                   | 2.5993211E 00                         |
| 800   | 1.4895354E 22                                     | 2.2173051E 01                         | 8.0002000E 02                   | 2.9031008E 00                         |
| 900   | 2.5718568E 22                                     | 2.2410247E 01                         | 1.3829052E 03                   | 3.1407925E 00                         |
| 1000  | 3.9940589E 22                                     | 2.2601414E 01                         | 2.1495667E 03                   | 3.3323509E 00                         |
| 1500  | 1.5526205E 23                                     | 2.3191065E 01                         | 8.3776156E 03                   | 3.9231205E 00                         |
| 2000  | 3.2146877E 23                                     | 2.3507139E 01                         | 1.7366217E 04                   | 4.2397053E 00                         |
| 2500  | 5.1616791E 23                                     | 2.3712791E 01                         | 2.7902462E 04                   | 4.4456425E 00                         |
| 3000  | 7.2743068E 23                                     | 2.3861791E 01                         | 3.9338941E 04                   | 4.5948226E 00                         |
| 3500  | 9.4894814E 23                                     | 2.3977242E 01                         | 5.1332943E 04                   | 4.7103962E 00                         |
| 4000  | 1.1771877E 24                                     | 2.4070846E 01                         | 6.3692482E 04                   | 4.8040882E 00                         |
| 4500  | 1.4100481E 24                                     | 2.4149234E 01                         | 7.6303329E 04                   | 4.8825435E 00                         |
| 5000  | 1.6462114E 24                                     | 2.4216486E 01                         | 8.9093821E 04                   | 4.9498476E 00                         |
| 6000  | 2.1252630E 24                                     | 2.4327413E 01                         | 1.1504060E 05                   | 5.0608512E 00                         |
| 7000  | 2.6101654E 24                                     | 2.4416668E 01                         | 1.4130565E 05                   | 5.1501596E 00                         |
| 8000  | 3.0987695E 24                                     | 2.4491189E 01                         | 1.6777208E 05                   | 5.2247197E 00                         |
| 9000  | 3.5898608E 24                                     | 2.4555078E 01                         | 1.9437381E 05                   | 5.2886378E 00                         |
| 10000 | 4.0827022E 24                                     | 2.4610948E 01                         | 2.2107075E 05                   | 5.3445313E 00                         |
| 290   | 3.0878030E 18                                     | 1.8489649E 01                         | 1.6293597E-01                   | -7.8798304E-01                        |
| 295   | 3.8606630E 18                                     | 1.8586662E 01                         | 2.0380678E-01                   | -6.9078137E-01                        |
| 299   | 4.5916092E 18                                     | 1.8661965E 01                         | 2.4247631E-01                   | -6.1533068E-01                        |
| 300   | 4.7916031E 18                                     | 1.8680481E 01                         | 2.5305891E-01                   | -5.9677837E-01                        |
| 301   | 4.9989095E 18                                     | 1.8698875E 01                         | 2.6402939E-01                   | -5.7834773E-01                        |
| 305   | 5.9055690E 18                                     | 1.8771262E 01                         | 3.1201935E-01                   | -5.0581847E-01                        |
| 310   | 7.2301953E 18                                     | 1.8859150E 01                         | 3.8215883E-01                   | -4.1775610E-01                        |
| 2040  | 3.3620615E 23                                     | 2.3526606E 01                         | 1.8163554E 04                   | 4.2592008E 00                         |
| 2870  | 6.7132505E 23                                     | 2.3826933E 01                         | 3.6301455E 04                   | 4.5599240E 00                         |
| 5600  | 1.9327703E 24                                     | 2.4286180E 01                         | 1.0461445E 05                   | 5.0195917E 00                         |
| 6100  | 2.1735362E 24                                     | 2.4337167E 01                         | 1.1765530E 05                   | 5.0706115E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval  $1.95\mu\text{m}$  to  $2.5\mu\text{m}$

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 2.2767796E 07                                     | 7.3573210E 00                         | 1.8683240E-12                   | -1.1726548E 01                        |
| 200   | 4.5452656E 11                                     | 1.1657559E 01                         | 3.7460753E-09                   | -7.4264235E 00                        |
| 250   | 1.8221158E 14                                     | 1.4260576E 01                         | 1.5154718E-05                   | -4.8194522E 00                        |
| 300   | 1.0268192E 16                                     | 1.6011494E 01                         | 8.6135417E-04                   | -3.0648183E 00                        |
| 350   | 1.8728322E 17                                     | 1.7272499E 01                         | 1.5833121E-02                   | -1.8004335E 00                        |
| 400   | 1.6798889E 18                                     | 1.8225281E 01                         | 1.4300740E-01                   | -8.4464151E-01                        |
| 450   | 9.3583790E 18                                     | 1.8971201E 01                         | 8.0154709E-01                   | -9.6070956E-02                        |
| 500   | 3.7271353E 19                                     | 1.9571375E 01                         | 3.2094156E 00                   | 5.0642595E-01                         |
| 600   | 3.0060698E 20                                     | 2.0477999E 01                         | 2.6113656E 01                   | 1.4168677E 00                         |
| 700   | 1.0512100E 21                                     | 2.1130723E 01                         | 1.1818165E 02                   | 2.0725501E 00                         |
| 800   | 4.2009403E 21                                     | 2.1623346E 01                         | 3.6940652E 02                   | 2.5675046E 00                         |
| 900   | 1.0197630E 22                                     | 2.2008499E 01                         | 9.0058728E 02                   | 2.9545258E 00                         |
| 1000  | 2.0798603E 22                                     | 2.2318034E 01                         | 1.8432448E 03                   | 3.2655830E 00                         |
| 1500  | 1.8091251E 23                                     | 2.3257468E 01                         | 1.6204595E 04                   | 4.2096382E 00                         |
| 2000  | 5.4930260E 23                                     | 2.3739811E 01                         | 4.9456933E 04                   | 4.6942272E 00                         |
| 2500  | 1.0958118E 24                                     | 2.4039736E 01                         | 9.8953403E 04                   | 4.9954308E 00                         |
| 3000  | 1.7719848E 24                                     | 2.4248460E 01                         | 1.6031110E 05                   | 5.2049636E 00                         |
| 3500  | 2.5395450E 24                                     | 2.4404756E 01                         | 2.3004370E 05                   | 5.3618103E 00                         |
| 4000  | 3.3720371E 24                                     | 2.4527892E 01                         | 3.0573353E 05                   | 5.4853431E 00                         |
| 4500  | 4.2516044E 24                                     | 2.4628553E 01                         | 3.8574559E 05                   | 5.5863010E 00                         |
| 5000  | 5.1660843E 24                                     | 2.4713162E 01                         | 4.6896485E 05                   | 5.6711403E 00                         |
| 6000  | 7.0684444E 24                                     | 2.4849324E 01                         | 6.4214928E 05                   | 5.8076360E 00                         |
| 7000  | 9.0364074E 24                                     | 2.4955996E 01                         | 8.2136534E 05                   | 5.9145364E 00                         |
| 8000  | 1.1046811E 25                                     | 2.5043237E 01                         | 1.0044847E 06                   | 6.0019433E 00                         |
| 9000  | 1.3086141E 25                                     | 2.5116811E 01                         | 1.1902650E 06                   | 6.0756437E 00                         |
| 10000 | 1.5146027E 25                                     | 2.5180299E 01                         | 1.3779365E 06                   | 6.1392292E 00                         |
|       |                                                   |                                       |                                 |                                       |
| 290   | 5.1110438E 15                                     | 1.5708509E 01                         | 4.2803468E-04                   | -3.3685211E 00                        |
| 295   | 7.2862962E 15                                     | 1.5862507E 01                         | 6.1071286E-04                   | -3.2141630E 00                        |
| 299   | 9.5958941E 15                                     | 1.5982085E 01                         | 8.0482597E-04                   | -3.0942980E 00                        |
| 300   | 1.0268192E 16                                     | 1.6011494E 01                         | 8.6135417E-04                   | -3.0648183E 00                        |
| 301   | 1.0982771E 16                                     | 1.6040712E 01                         | 9.2144790E-04                   | -3.0355292E 00                        |
| 305   | 1.4312466E 16                                     | 1.6155714E 01                         | 1.2015901E-03                   | -2.9202437E 00                        |
| 310   | 1.9742218E 16                                     | 1.6295396E 01                         | 1.6587788E-03                   | -2.7802115E 00                        |
| 2040  | 5.8713316E 23                                     | 2.3768736E 01                         | 5.2878658E 04                   | 4.7232804E 00                         |
| 2870  | 1.5860711E 24                                     | 2.4200323E 01                         | 1.4343221E 05                   | 5.1566467E 00                         |
| 5600  | 6.2978343E 24                                     | 2.4799191E 01                         | 5.7198595E 05                   | 5.7573861E 00                         |
| 6100  | 7.2627782E 24                                     | 2.4861103E 01                         | 6.5984446E 05                   | 5.8194416E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 0.7 $\mu$ m to 1.3 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$        | $\log_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$ | $\log_{10} N_{0,\Delta\lambda}$ |
|-------|------------------------------|---------------------------------|-----------------------|---------------------------------|
| °K    | Quanta $s^{-1}m^{-2}sr^{-1}$ |                                 | $W m^{-2}sr^{-1}$     |                                 |
| 50    | 0.                           |                                 | 0.                    |                                 |
| 100   | 0.                           |                                 | 0.                    |                                 |
| 150   | 0.                           |                                 | 0.                    |                                 |
| 200   | 0.                           |                                 | 0.                    |                                 |
| 250   | 0.                           |                                 | 5.7837833E-14         | -1.3237788E 01                  |
| 300   | 7.4183812E 08                | 8.8703092E 00                   | 1.1663439E-13         | -9.9331735E 00                  |
| 350   | 1.6986542E 11                | 1.1230105E 01                   | 2.6834383E-03         | -7.5713084E 00                  |
| 400   | 1.0201348E 13                | 1.3008658E 01                   | 1.6195412E-06         | -5.7906060E 00                  |
| 450   | 2.5054792E 14                | 1.4398891E 01                   | 3.9975798E-05         | -4.3982029E 00                  |
| 500   | 3.2861920E 15                | 1.5516693E 01                   | 5.2697936E-04         | -3.2782064E 00                  |
| 600   | 1.6065258E 17                | 1.7205888E 01                   | 2.6028073E-02         | -1.5845580E 00                  |
| 700   | 2.6611040E 18                | 1.8425062E 01                   | 4.3566429E-01         | -3.6084803E-01                  |
| 800   | 2.2343580E 19                | 1.9349153E 01                   | 3.6970270E 00         | 5.6785263E-01                   |
| 900   | 1.1902313E 20                | 2.075631E 01                    | 1.9906788E 01         | 1.2990012E 00                   |
| 1000  | 4.6040562E 20                | 2.0663140E 01                   | 7.7843011E 01         | 1.8912196E 00                   |
| 1500  | 3.0040489E 22                | 2.2477707E 01                   | 5.3561037E 03         | 3.7288490E 00                   |
| 2000  | 2.7120962E 23                | 2.3433305E 01                   | 5.0614432E 04         | 4.7042744E 00                   |
| 2500  | 1.0768663E 24                | 2.4032162E 01                   | 2.0823538E 05         | 5.3185545E 00                   |
| 3000  | 2.7915432E 24                | 2.4445844E 01                   | 5.5441931E 05         | 5.7438394E 00                   |
| 3500  | 5.6271337E 24                | 2.4750287E 01                   | 1.1402698E 06         | 6.0570077E 00                   |
| 4000  | 9.6539069E 24                | 2.4984703E 01                   | 1.9864411E 06         | 6.2980757E 00                   |
| 4500  | 1.4842187E 25                | 2.5171498E 01                   | 3.0905220E 06         | 6.4900319E 00                   |
| 5000  | 2.1106981E 25                | 2.5324426E 01                   | 4.4364782E 06         | 6.6470384E 00                   |
| 6000  | 3.6428843E 25                | 2.5561445E 01                   | 7.7627298E 06         | 6.8900145E 00                   |
| 7000  | 5.4757802E 25                | 2.5738446E 01                   | 1.1778684E 07         | 7.0710968E 00                   |
| 8000  | 7.5370316E 25                | 2.5877200E 01                   | 1.6322591E 07         | 7.2127891E 00                   |
| 9000  | 9.7717252E 25                | 2.5989971E 01                   | 2.1269636E 07         | 7.3277601E 00                   |
| 10000 | 1.2139436E 26                | 2.6084198E 01                   | 2.6527010E 07         | 7.4236883E 00                   |
|       |                              |                                 |                       |                                 |
| 290   | 2.0043509E 08                | 8.3020822E 00                   | 3.1504307E-11         | -1.0501630E 01                  |
| 295   | 3.8995566E 08                | 8.5910152E 00                   | 6.1281615E-11         | -1.0212670E 01                  |
| 299   | 6.5323758E 08                | 8.8150712E 00                   | 1.0272034E-10         | -9.9883436E 00                  |
| 300   | 7.4183812E 08                | 8.8703092E 00                   | 1.1663439E-10         | -9.9331735E 00                  |
| 301   | 8.4065702E 08                | 8.9246188E 00                   | 1.3231616E-10         | -9.8783872E 00                  |
| 305   | 1.3816444E 09                | 9.1403964E 00                   | 2.1740483E-10         | -9.6627309E 00                  |
| 310   | 2.5247750E 09                | 9.4022228E 00                   | 3.9730098E-10         | -9.4008805E 00                  |
| 2040  | 3.0976548E 23                | 2.3491033E 01                   | 5.7995838E 04         | 4.7633969E 00                   |
| 2870  | 2.2437380E 24                | 2.4350972E 01                   | 4.4285717E 05         | 5.6462637E 00                   |
| 5600  | 2.9892847E 25                | 2.5475567E 01                   | 6.3392330E 06         | 6.8020368E 00                   |
| 6100  | 3.8139760E 25                | 2.5581378E 01                   | 8.1362419E 06         | 6.9104239E 00                   |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 0.9 $\mu$ m to 1.3 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|-------|-------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50    | 0.                                                          |                                         | 0.                                                          |                                         |
| 100   | 0.                                                          |                                         | 0.                                                          |                                         |
| 150   | 0.                                                          |                                         | 0.                                                          |                                         |
| 200   | 0.                                                          |                                         | 0.                                                          |                                         |
| 250   | 0.                                                          |                                         | 5.7837833E-14                                               | -1.3237788E 01                          |
| 300   | 7.4183812E 08                                               | 8.8703092E 00                           | 1.1663439E-10                                               | -9.9331735E 00                          |
| 350   | 1.6986542E 11                                               | 1.1230105E 01                           | 2.6334328E-08                                               | -7.5713094E 00                          |
| 400   | 1.0201253E 13                                               | 1.3008654E 01                           | 1.6195197E-06                                               | -5.7906138E 00                          |
| 450   | 2.5053880E 14                                               | 1.4399875E 01                           | 3.9973724E-05                                               | -4.3982254E 00                          |
| 500   | 3.2858363E 15                                               | 1.5516646E 01                           | 5.2689816E-04                                               | -3.2782733E 00                          |
| 600   | 1.6056344E 17                                               | 1.7205647E 01                           | 2.6007606E-02                                               | -1.5848996E 00                          |
| 700   | 2.6563746E 18                                               | 1.8424289E 01                           | 4.3457122E-01                                               | -3.6193903E-01                          |
| 800   | 2.2246802E 19                                               | 1.9347307E 01                           | 3.6749843E 00                                               | 5.6525549E-01                           |
| 900   | 1.1803347E 20                                               | 2.0072005E 01                           | 1.9675263E 01                                               | 1.2939206E 00                           |
| 1000  | 4.5387189E 20                                               | 2.0656933E 01                           | 7.6306131E 01                                               | 1.8825594E 00                           |
| 1500  | 2.8019119E 22                                               | 2.2447454E 01                           | 4.8705226E 03                                               | 3.6875756E 00                           |
| 2000  | 2.3379281E 23                                               | 2.3369831E 01                           | 4.1506202E 04                                               | 4.6181130E 00                           |
| 2500  | 8.5694561E 23                                               | 2.3932953E 01                           | 1.5423407E 05                                               | 5.1881804E 00                           |
| 3000  | 2.0679713E 24                                               | 2.4315544E 01                           | 3.7567762E 05                                               | 5.5748154E 00                           |
| 3500  | 3.9218512E 24                                               | 2.4593491E 01                           | 7.1718938E 05                                               | 5.8556339E 00                           |
| 4000  | 6.3932498E 24                                               | 2.4805722E 01                           | 1.1748447E 06                                               | 6.0699805E 00                           |
| 4500  | 9.4190259E 24                                               | 2.4974006E 01                           | 1.7372922E 06                                               | 6.2398729E 00                           |
| 5000  | 1.2925333E 25                                               | 2.5111442E 01                           | 2.3909090E 06                                               | 6.3785631E 00                           |
| 6000  | 2.1102918E 25                                               | 2.5324343E 01                           | 3.9199249E 06                                               | 6.5932778E 00                           |
| 7000  | 3.0453667E 25                                               | 2.5483711E 01                           | 5.6739001E 06                                               | 6.7538818E 00                           |
| 8000  | 4.0660390E 25                                               | 2.5609171E 01                           | 7.5898099E 06                                               | 6.8802310E 00                           |
| 9000  | 5.1479930E 25                                               | 2.5711638E 01                           | 9.6241767E 06                                               | 6.9833636E 00                           |
| 10000 | 6.2760058E 25                                               | 2.5797683E 01                           | 1.1746957E 07                                               | 7.0699254E 00                           |
|       |                                                             |                                         |                                                             |                                         |
| 290   | 2.0048509E 08                                               | 8.3020822E 00                           | 3.1504307E-11                                               | -1.0501630E 01                          |
| 295   | 3.8995566E 08                                               | 8.5910152E 00                           | 6.1281615E-11                                               | -1.0212670E 01                          |
| 299   | 6.5323758E 08                                               | 8.8150712E 00                           | 1.0272034E-10                                               | -9.9883436E 00                          |
| 300   | 7.4133812E 08                                               | 8.8703092E 00                           | 1.1663439E-10                                               | -9.9331735E 00                          |
| 301   | 8.4065702E 08                                               | 8.9246188E 00                           | 1.3231616E-10                                               | -9.8783872E 00                          |
| 305   | 1.3816444E 09                                               | 9.1403964E 00                           | 2.1740483E-10                                               | -9.6627309E 00                          |
| 310   | 2.5247750E 09                                               | 9.4022228E 00                           | 3.9730098E-10                                               | -9.4008805E 00                          |
| 2040  | 2.6528527E 23                                               | 2.3423713E 01                           | 4.7159203E 04                                               | 4.6735565E 00                           |
| 2870  | 1.6916870E 24                                               | 2.4228320E 01                           | 3.0667229E 05                                               | 5.4866746E 00                           |
| 5600  | 1.7667557E 25                                               | 2.5247176E 01                           | 3.2769837E 06                                               | 6.5154743E 00                           |
| 6100  | 2.1991943E 25                                               | 2.5342264E 01                           | 4.0864233E 06                                               | 6.6113434E 00                           |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval  $0.7\mu\text{m}$  to  $0.9\mu\text{m}$

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|---------------------------------------|
| 50      | 0.                                                                         |                                       | 0.                                                       |                                       |
| 100     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 150     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 200     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 250     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 300     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 350     | 0.                                                                         |                                       | 5.5547456E-14                                            | -1.3255336E 01                        |
| 400     | 9.4354839E 07                                                              | 7.9747642E 00                         | 2.1510862E-11                                            | -1.0667342E 01                        |
| 450     | 9.1232518E 09                                                              | 9.9601496E 00                         | 2.0739520E-09                                            | -8.6832014E 00                        |
| 500     | 3.5599183E 11                                                              | 1.1551440E 01                         | 8.1197455E-08                                            | -7.0904576E 00                        |
| 600     | 8.9137744E 13                                                              | 1.3950062E 01                         | 2.0467606E-05                                            | -4.6889330E 00                        |
| 700     | 4.7293882E 15                                                              | 1.5674805E 01                         | 1.0930687E-03                                            | -2.9613525E 00                        |
| 800     | 9.4777603E 16                                                              | 1.6976707E 01                         | 2.2042664E-02                                            | -1.6567359E 00                        |
| 900     | 9.8966163E 17                                                              | 1.7995487E 01                         | 2.3152460E-01                                            | -6.3540285E-01                        |
| 1000    | 6.5337198E 18                                                              | 1.8815161E 01                         | 1.5368802E 00                                            | 1.8664001E-01                         |
| 1500    | 2.0213694E 21                                                              | 2.1305645E 01                         | 4.8558100E 02                                            | 2.6862617E 00                         |
| 2000    | 3.7416804E 22                                                              | 2.2573067E 01                         | 9.1082294E 03                                            | 3.9594340E 00                         |
| 2500    | 2.1992072E 23                                                              | 2.3342266E 01                         | 5.4001310E 04                                            | 4.7324043E 00                         |
| 3000    | 7.2357182E 23                                                              | 2.3859482E 01                         | 1.7874168E 05                                            | 5.2522259E 00                         |
| 3500    | 1.7052825E 24                                                              | 2.4231796E 01                         | 4.2308044E 05                                            | 5.6264230E 00                         |
| 4000    | 3.2606573E 24                                                              | 2.4513305E 01                         | 8.1159643E 05                                            | 5.9093401E 00                         |
| 4500    | 5.4231607E 24                                                              | 2.4734252E 01                         | 1.3532298E 06                                            | 6.1313716E 00                         |
| 5000    | 8.1816480E 24                                                              | 2.4912841E 01                         | 2.0455692E 06                                            | 6.3108143E 00                         |
| 6000    | 1.5325924E 25                                                              | 2.5185427E 01                         | 3.8428050E 06                                            | 6.5846484E 00                         |
| 7000    | 2.4299136E 25                                                              | 2.5385591E 01                         | 6.1047838E 06                                            | 6.7856703E 00                         |
| 8000    | 3.4709925E 25                                                              | 2.5540453E 01                         | 8.7327807E 06                                            | 6.9411526E 00                         |
| 9000    | 4.6237321E 25                                                              | 2.5664993E 01                         | 1.1645459E 07                                            | 7.0661566E 00                         |
| 10000   | 5.8634300E 25                                                              | 2.5768152E 01                         | 1.4780053E 07                                            | 7.1696761E 00                         |
| 290     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 295     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 299     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 300     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 301     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 305     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 310     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 2040    | 4.4480206E 22                                                              | 2.2648167E 01                         | 1.0836635E 04                                            | 4.0348945E 00                         |
| 2870    | 5.5205101E 23                                                              | 2.3741979E 01                         | 1.3618487E 05                                            | 5.1341289E 00                         |
| 5600    | 1.2225290E 25                                                              | 2.5087259E 01                         | 3.0622492E 06                                            | 6.4860405E 00                         |
| 6100    | 1.6147817E 25                                                              | 2.5208114E 01                         | 4.0498186E 06                                            | 6.6074356E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 0.2 $\mu$ m to 0.3 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 0.                                                |                                       | 0.                              |                                       |
| 250   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 350   | 0.                                                |                                       | 0.                              |                                       |
| 400   | 0.                                                |                                       | 0.                              |                                       |
| 450   | 0.                                                |                                       | 0.                              |                                       |
| 500   | 0.                                                |                                       | 0.                              |                                       |
| 600   | 0.                                                |                                       | 0.                              |                                       |
| 700   | 0.                                                |                                       | 0.                              |                                       |
| 800   | 0.                                                |                                       | 0.                              |                                       |
| 900   | 0.                                                |                                       | 0.                              |                                       |
| 1000  | 0.                                                |                                       | 0.                              |                                       |
| 1500  | 9.6134379E 12                                     | 1.2982879E 01                         | 6.5784680E-06                   | -5.1818753E 00                        |
| 2000  | 3.8750988E 16                                     | 1.6588283E 01                         | 2.6823337E-02                   | -1.5714872E 00                        |
| 2500  | 5.9843136E 18                                     | 1.8777014E 01                         | 4.1910729E 00                   | 6.2232521E-01                         |
| 3000  | 1.7927495E 20                                     | 2.0253519E 01                         | 1.2703815E 02                   | 2.1039342E 00                         |
| 3500  | 2.0922734E 21                                     | 2.1320618E 01                         | 1.4998706E 03                   | 3.1760538E 00                         |
| 4000  | 1.3493579E 22                                     | 2.2130127E 01                         | 9.7812212E 03                   | 3.9903931E 00                         |
| 4500  | 5.8428432E 22                                     | 2.2766624E 01                         | 4.2800407E 04                   | 4.6314480E 00                         |
| 5000  | 1.9099873E 23                                     | 2.3281030E 01                         | 1.4128303E 05                   | 5.1500900E 00                         |
| 6000  | 1.1561650E 24                                     | 2.4063020E 01                         | 9.7002110E 05                   | 5.9395298E 00                         |
| 7000  | 4.2716160E 24                                     | 2.4630592E 01                         | 3.2603719E 06                   | 6.5132672E 00                         |
| 8000  | 1.1535546E 25                                     | 2.5062038E 01                         | 9.9080307E 06                   | 6.9497818E 00                         |
| 9000  | 2.5205573E 25                                     | 2.5401497E 01                         | 1.9652462E 07                   | 7.2934170E 00                         |
| 10000 | 4.7406347E 25                                     | 2.5675837E 01                         | 3.7258089E 07                   | 7.5712206E 00                         |
| 290   | 0.                                                |                                       | 0.                              |                                       |
| 295   | 0.                                                |                                       | 0.                              |                                       |
| 299   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 301   | 0.                                                |                                       | 0.                              |                                       |
| 305   | 0.                                                |                                       | 0.                              |                                       |
| 310   | 0.                                                |                                       | 0.                              |                                       |
| 2040  | 6.3358594E 16                                     | 1.6801805E 01                         | 4.3897442E-02                   | -1.3575608E 00                        |
| 2870  | 8.2708828E 19                                     | 1.9917552E 01                         | 5.8430936E 01                   | 1.7666429E 00                         |
| 5600  | 6.0558165E 23                                     | 2.3782173E 01                         | 4.5275664E 05                   | 5.6558648E 00                         |
| 6100  | 1.3419641E 24                                     | 2.4127741E 01                         | 1.0113991E 06                   | 6.0049226E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 0.3 $\mu$ m to 0.4 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                                   | $\log_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$              | $\log_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------------|---------------------------------|------------------------------------|---------------------------------|
| °K    | Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> |                                 | W m <sup>-2</sup> sr <sup>-1</sup> |                                 |
| 50    | 0.                                                      |                                 | 0.                                 |                                 |
| 100   | 0.                                                      |                                 | 0.                                 |                                 |
| 150   | 0.                                                      |                                 | 0.                                 |                                 |
| 200   | 0.                                                      |                                 | 0.                                 |                                 |
| 250   | 0.                                                      |                                 | 0.                                 |                                 |
| 300   | 0.                                                      |                                 | 0.                                 |                                 |
| 350   | 0.                                                      |                                 | 0.                                 |                                 |
| 400   | 0.                                                      |                                 | 0.                                 |                                 |
| 450   | 0.                                                      |                                 | 0.                                 |                                 |
| 500   | 0.                                                      |                                 | 0.                                 |                                 |
| 600   | 0.                                                      |                                 | 0.                                 |                                 |
| 700   | 0.                                                      |                                 | 0.                                 |                                 |
| 800   | 0.                                                      |                                 | 0.                                 |                                 |
| 900   | 1.0747606E 05                                           | 9.0313118E 00                   | 3.0323682E-12                      | -1.1518218E 01                  |
| 1000  | 6.5762464E 10                                           | 1.0817978E 01                   | 5.5129986E-17                      | -9.2586122E 00                  |
| 1500  | 1.6338682E 16                                           | 1.6213217E 01                   | 3.3639101E-08                      | -7.4731557E 00                  |
| 2000  | 8.9564174E 18                                           | 1.6952134E 01                   | 8.4806633E-03                      | -2.0715702E 00                  |
| 2500  | 4.1576520E 20                                           | 2.0618848E 01                   | 4.7171236E 00                      | 6.7367727E-01                   |
| 3000  | 5.5435566E 21                                           | 2.1743788E 01                   | 2.2186506E 02                      | 2.3460889E 00                   |
| 3500  | 5.5953541E 22                                           | 2.1743788E 01                   | 2.9916818E 03                      | 3.4759154E 00                   |
| 4000  | 1.4792241E 23                                           | 2.2555742E 01                   | 1.9586833E 04                      | 4.2919642E 00                   |
| 4500  | 1.4792241E 23                                           | 2.3170034E 01                   | 8.1220806E 04                      | 4.9096673E 00                   |
| 5000  | 4.4803819E 23                                           | 2.3651315E 01                   | 2.4762510E 05                      | 5.3937947E 00                   |
| 5500  | 1.0932771E 24                                           | 2.4038730E 01                   | 6.0757461E 05                      | 5.7835996E 00                   |
| 6000  | 4.2096314E 24                                           | 2.4624244E 01                   | 2.3597158E 06                      | 6.3728597E 00                   |
| 7000  | 1.1122166E 25                                           | 2.5046189E 01                   | 6.2743825E 06                      | 6.7975711E 00                   |
| 8000  | 2.3185162E 25                                           | 2.5365210E 01                   | 1.3142957E 07                      | 7.1186931E 00                   |
| 9000  | 4.1243141E 25                                           | 2.5615352E 01                   | 2.3467702E 07                      | 7.3704706E 00                   |
| 10000 | 6.5643264E 25                                           | 2.5817190E 01                   | 3.7463577E 07                      | 7.5736093E 00                   |
| 290   | 0.                                                      |                                 | 0.                                 |                                 |
| 295   | 0.                                                      |                                 | 0.                                 |                                 |
| 299   | 0.                                                      |                                 | 0.                                 |                                 |
| 300   | 0.                                                      |                                 | 0.                                 |                                 |
| 301   | 0.                                                      |                                 | 0.                                 |                                 |
| 305   | 0.                                                      |                                 | 0.                                 |                                 |
| 310   | 0.                                                      |                                 | 0.                                 |                                 |
| 2040  | 1.3020067E 19                                           | 1.9114613E 01                   | 6.8649812E 00                      | 8.3663934E-01                   |
| 2870  | 3.0752575E 21                                           | 2.1487882E 01                   | 1.6550731E 03                      | 3.2188172E 00                   |
| 5600  | 2.5970952E 24                                           | 2.4414488E 01                   | 1.4512619E 06                      | 6.1517458E 00                   |
| 6100  | 4.7042774E 24                                           | 2.4672493E 01                   | 2.6388995E 06                      | 6.4214229E 00                   |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 0.4 $\mu\text{m}$  to 0.5 $\mu\text{m}$

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 0.                                                |                                       | 0.                              |                                       |
| 250   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 350   | 0.                                                |                                       | 0.                              |                                       |
| 400   | 0.                                                |                                       | 0.                              |                                       |
| 450   | 0.                                                |                                       | 0.                              |                                       |
| 500   | 0.                                                |                                       | 0.                              |                                       |
| 600   | 0.                                                |                                       | 0.                              |                                       |
| 700   | 1.5856099E 06                                     | 8.2267570E 00                         | 6.9915730E-11                   | -1.0155425E 01                        |
| 800   | 3.3670381E 10                                     | 1.0527248E 01                         | 1.3775543E-08                   | -7.8608913E 00                        |
| 900   | 2.0754278E 12                                     | 1.2317108E 01                         | 8.5201815E-07                   | -6.0695512E 00                        |
| 1000  | 5.6777533E 13                                     | 1.3754176E 01                         | 2.3393731E-05                   | -4.6309005E 00                        |
| 1500  | 1.2764553E 18                                     | 1.8106005E 01                         | 5.3479440E-01                   | -2.7181315E-01                        |
| 2000  | 2.0694104E 20                                     | 2.0315847E 01                         | 8.7849020E 01                   | 1.9437369E 00                         |
| 2500  | 4.5428926E 21                                     | 2.1657332E 01                         | 1.9475528E 03                   | 3.2894893E 00                         |
| 3000  | 3.6261548E 22                                     | 2.2559446E 01                         | 1.5660178E 04                   | 4.1947967E 00                         |
| 3500  | 1.6145810E 23                                     | 2.3208060E 01                         | 7.0120687E 04                   | 4.8458462E 00                         |
| 4000  | 4.9778878E 23                                     | 2.3697045E 01                         | 2.1713565E 05                   | 5.3367311E 00                         |
| 4500  | 1.1995342E 24                                     | 2.4079012E 01                         | 5.2506278E 05                   | 5.7202113E 00                         |
| 5000  | 2.4309000E 24                                     | 2.4385767E 01                         | 1.0670684E 06                   | 6.0281923E 00                         |
| 6000  | 7.0532498E 24                                     | 2.4848389E 01                         | 3.1093409E 06                   | 6.4926684E 00                         |
| 7000  | 1.5187421E 25                                     | 2.5181484E 01                         | 6.7155840E 06                   | 6.8270838E 00                         |
| 8000  | 2.7143004E 25                                     | 2.5433658E 01                         | 1.2029177E 07                   | 7.0802360E 00                         |
| 9000  | 4.2853251E 25                                     | 2.5631984E 01                         | 1.9024320E 07                   | 7.2793092E 00                         |
| 10000 | 6.2043670E 25                                     | 2.5792697E 01                         | 2.7580904E 07                   | 7.4406085E 00                         |
| 290   | 0.                                                |                                       | 0.                              |                                       |
| 295   | 0.                                                |                                       | 0.                              |                                       |
| 299   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 301   | 0.                                                |                                       | 0.                              |                                       |
| 305   | 0.                                                |                                       | 0.                              |                                       |
| 310   | 0.                                                |                                       | 0.                              |                                       |
| 2040  | 2.7976572E 20                                     | 2.0446795E 01                         | 1.1887062E 02                   | 2.0750745E 00                         |
| 2870  | 2.2622796E 22                                     | 2.2354546E 01                         | 9.7532680E 03                   | 3.9891502E 00                         |
| 5600  | 4.8168460E 24                                     | 2.4682763E 01                         | 2.1202107E 06                   | 6.3263791E 00                         |
| 6100  | 7.6997640E 24                                     | 2.4886477E 01                         | 3.3955374E 06                   | 6.5309085E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval  $0.5\mu\text{m}$  to  $0.6\mu\text{m}$

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 0.                                                |                                       | 0.                              |                                       |
| 250   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 350   | 0.                                                |                                       | 0.                              |                                       |
| 400   | 0.                                                |                                       | 0.                              |                                       |
| 450   | 0.                                                |                                       | 0.                              |                                       |
| 500   | 0.                                                |                                       | 0.                              |                                       |
| 600   | 3.1844758E 08                                     | 8.5030380E 00                         | 1.0889874E-10                   | -9.9629773E 00                        |
| 700   | 1.1364075E 11                                     | 1.1055534E 01                         | 3.8781900E-08                   | -7.4113709E 00                        |
| 800   | 9.4611483E 12                                     | 1.2975944E 01                         | 3.2422500E-06                   | -5.4891535E 00                        |
| 900   | 2.9900527E 14                                     | 1.4475679E 01                         | 1.0287085E-04                   | -3.9877077E 00                        |
| 1000  | 4.7870959E 15                                     | 1.5680072E 01                         | 1.6530648E-03                   | -2.7817101E 00                        |
| 1500  | 2.1132914E 19                                     | 1.9324959E 01                         | 7.4050900E 00                   | 8.6953034E-01                         |
| 2000  | 1.4797564E 21                                     | 2.1170190E 01                         | 5.2347730E 02                   | 2.7188979E 00                         |
| 2500  | 1.9331949E 22                                     | 2.2286276E 01                         | 6.8826370E 03                   | 3.8377549E 00                         |
| 3000  | 1.0825908E 23                                     | 2.3034464E 01                         | 3.8716142E 04                   | 4.5878921E 00                         |
| 3500  | 3.7249390E 23                                     | 2.3571119E 01                         | 1.3365256E 05                   | 5.1259773E 00                         |
| 4000  | 9.4415444E 23                                     | 2.3975043E 01                         | 3.3961628E 05                   | 5.5309886E 00                         |
| 4500  | 1.9511625E 24                                     | 2.4290293E 01                         | 7.0321613E 05                   | 5.8470889E 00                         |
| 5000  | 3.4948934E 24                                     | 2.4543434E 01                         | 1.2615621E 06                   | 6.1009087E 00                         |
| 6000  | 8.4256268E 24                                     | 2.4925602E 01                         | 3.0485065E 06                   | 6.4840872E 00                         |
| 7000  | 1.5909540E 25                                     | 2.5201657E 01                         | 5.7656713E 06                   | 6.7608500E 00                         |
| 8000  | 2.5811944E 25                                     | 2.5411652E 01                         | 9.3618574E 06                   | 6.9713621E 00                         |
| 9000  | 3.7823192E 25                                     | 2.5577758E 01                         | 1.3735972E 07                   | 7.1378594E 00                         |
| 10000 | 5.1656103E 25                                     | 2.5713206E 01                         | 1.8776376E 07                   | 7.2736118E 00                         |
| 290   | 0.                                                |                                       | 0.                              |                                       |
| 295   | 0.                                                |                                       | 0.                              |                                       |
| 299   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 301   | 0.                                                |                                       | 0.                              |                                       |
| 305   | 0.                                                |                                       | 0.                              |                                       |
| 310   | 0.                                                |                                       | 0.                              |                                       |
| 2040  | 1.9023814E 21                                     | 2.1279297E 01                         | 6.7339204E 02                   | 2.8282680E 00                         |
| 2870  | 7.3233125E 22                                     | 2.2864707E 01                         | 2.6163023E 04                   | 4.4176880E 00                         |
| 5600  | 6.1471741E 24                                     | 2.4788676E 01                         | 2.2222942E 06                   | 6.3468016E 00                         |
| 6100  | 9.0597334E 24                                     | 2.4957115E 01                         | 3.2785535E 06                   | 6.5156829E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 0.6 $\mu\text{m}$  to 0.7 $\mu\text{m}$

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 0.                                                |                                       | 0.                              |                                       |
| 250   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 350   | 0.                                                |                                       | 0.                              |                                       |
| 400   | 0.                                                |                                       | 0.                              |                                       |
| 450   | 0.                                                |                                       | 1.5178961E-13                   | -1.2818758E 01                        |
| 500   | 6.1428932E 07                                     | 7.7883731E 00                         | 1.8199638E-11                   | -1.0739937E 01                        |
| 600   | 7.1351557E 10                                     | 1.0853404E 01                         | 2.0862344E-08                   | -7.6806370E 00                        |
| 700   | 1.1154906E 13                                     | 1.3047466E 01                         | 3.2759673E-06                   | -5.4846605E 00                        |
| 800   | 5.0113783E 14                                     | 1.4699957E 01                         | 1.4775971E-04                   | -3.8304440E 00                        |
| 900   | 9.7745419E 15                                     | 1.5990096E 01                         | 2.8922568E-03                   | -2.5387617E 00                        |
| 1000  | 1.0609332E 17                                     | 1.7025688E 01                         | 3.1492044E-02                   | -1.5017992E 00                        |
| 1500  | 1.4264667E 20                                     | 2.0154261E 01                         | 4.2819092E 01                   | 1.6316375E 00                         |
| 2000  | 5.4041225E 21                                     | 2.1732725E 01                         | 1.6327721E 03                   | 3.2129256E 00                         |
| 2500  | 4.8410650E 22                                     | 2.2684941E 01                         | 1.4687081E 04                   | 4.1669355E 00                         |
| 3000  | 2.0996794E 23                                     | 2.3322153E 01                         | 5.3891310E 04                   | 4.8053738E 00                         |
| 3500  | 6.0087516E 23                                     | 2.3778784E 01                         | 1.8318484E 05                   | 5.2628896E 00                         |
| 4000  | 1.3256765E 24                                     | 2.4122438E 01                         | 4.0476849E 05                   | 5.6072068E 00                         |
| 4500  | 2.4593706E 24                                     | 2.4390824E 01                         | 7.5180764E 05                   | 5.8761067E 00                         |
| 5000  | 4.0422446E 24                                     | 2.4606623E 01                         | 1.2368367E 06                   | 6.0923124E 00                         |
| 6000  | 3.5732076E 24                                     | 2.4933397E 01                         | 2.6283638E 06                   | 6.4195855E 00                         |
| 7000  | 1.4815636E 25                                     | 2.5170720E 01                         | 4.5438527E 06                   | 6.6574243E 00                         |
| 8000  | 2.2510772E 25                                     | 2.5352397E 01                         | 6.9086897E 06                   | 6.8393956E 00                         |
| 9000  | 3.1408150E 25                                     | 2.5497043E 01                         | 9.6443856E 06                   | 6.9842746E 00                         |
| 10000 | 4.1283091E 25                                     | 2.5615772E 01                         | 1.2681789E 07                   | 7.1031806E 00                         |
| 290   | 0.                                                |                                       | 0.                              |                                       |
| 295   | 0.                                                |                                       | 0.                              |                                       |
| 299   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 301   | 0.                                                |                                       | 0.                              |                                       |
| 305   | 0.                                                |                                       | 0.                              |                                       |
| 310   | 0.                                                |                                       | 0.                              |                                       |
| 2040  | 6.6973410E 21                                     | 2.1825902E 01                         | 2.0243043E 03                   | 3.3062758E 00                         |
| 2870  | 1.5053850E 23                                     | 2.3177648E 01                         | 4.5770865E 04                   | 4.6605892E 00                         |
| 5600  | 6.5483790E 24                                     | 2.4816134E 01                         | 2.0054449E 06                   | 6.3022107E 00                         |
| 6100  | 9.1289521E 24                                     | 2.4960421E 01                         | 2.7974229E 06                   | 6.4467582E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval  $0.7\mu\text{m}$  to  $0.8\mu\text{m}$

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 0.                                                |                                       | 0.                              |                                       |
| 250   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 350   | 0.                                                |                                       | 0.                              |                                       |
| 400   | 0.                                                |                                       | 1.8952301E-13                   | -1.2722338E 01                        |
| 450   | 1.3434507E 08                                     | 8.1282218E 00                         | 3.4304452E-11                   | -1.0464649E 01                        |
| 500   | 8.1588789E 09                                     | 9.9116306E 00                         | 2.0842442E-07                   | -8.6810515E 00                        |
| 600   | 3.9339567E 12                                     | 1.2594829E 01                         | 1.0092566E-06                   | -5.9959984E 00                        |
| 700   | 3.3081527E 14                                     | 1.4519586E 01                         | 8.5207832E-05                   | -4.0695205E 00                        |
| 800   | 9.3003350E 15                                     | 1.5968499E 01                         | 2.4036075E-03                   | -2.6191365E 00                        |
| 900   | 1.2559873E 17                                     | 1.7098985E 01                         | 3.2553993E-02                   | -1.4873957E 00                        |
| 1000  | 1.0134589E 18                                     | 1.8005806E 01                         | 2.6332818E-01                   | -5.7950265E-01                        |
| 1500  | 5.5029798E 20                                     | 2.0740598E 01                         | 1.4416102E 02                   | 2.1588479E 00                         |
| 2000  | 1.3086178E 22                                     | 2.2116813E 01                         | 3.4435283E 03                   | 3.5370037E 00                         |
| 2500  | 8.8248991E 22                                     | 2.2945710E 01                         | 2.3286332E 04                   | 4.3671011E 00                         |
| 3000  | 3.1623600E 23                                     | 2.3500011E 01                         | 8.3600931E 04                   | 4.9222112E 00                         |
| 3500  | 7.3939561E 23                                     | 2.3897295E 01                         | 2.0896406E 05                   | 5.3200716E 00                         |
| 4000  | 1.5724687E 24                                     | 2.4196582E 01                         | 4.1666632E 05                   | 5.6197884E 00                         |
| 4500  | 2.6960220E 24                                     | 2.4430723E 01                         | 7.1492370E 05                   | 5.8542597E 00                         |
| 5000  | 4.1631634E 24                                     | 2.4619423E 01                         | 1.1046368E 06                   | 6.0432196E 00                         |
| 6000  | 8.0603058E 24                                     | 2.4906352E 01                         | 2.1405594E 06                   | 6.3305273E 00                         |
| 7000  | 1.3054290E 25                                     | 2.5116086E 01                         | 3.4715446E 06                   | 6.5405228E 00                         |
| 8000  | 1.8954845E 25                                     | 2.5277720E 01                         | 5.0390182E 06                   | 6.7023460E 00                         |
| 9000  | 2.5542827E 25                                     | 2.5407269E 01                         | 6.7926065E 06                   | 6.8320365E 00                         |
| 10000 | 3.2678809E 25                                     | 2.5514266E 01                         | 8.6924784E 06                   | 6.9391437E 00                         |
| 290   | 0.                                                |                                       | 0.                              |                                       |
| 295   | 0.                                                |                                       | 0.                              |                                       |
| 299   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 301   | 0.                                                |                                       | 0.                              |                                       |
| 305   | 0.                                                |                                       | 0.                              |                                       |
| 310   | 0.                                                |                                       | 0.                              |                                       |
| 2040  | 1.5774835E 22                                     | 2.2197965E 01                         | 4.1521438E 03                   | 3.6182725E 00                         |
| 2870  | 2.3676468E 23                                     | 2.3374317E 01                         | 6.2565285E 04                   | 4.7963334E 00                         |
| 5600  | 6.3559767E 24                                     | 2.4803182E 01                         | 1.6874235E 06                   | 6.2272242E 00                         |
| 6100  | 8.5146500E 24                                     | 2.4930167E 01                         | 2.2613773E 06                   | 6.3543731E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 0.6 $\mu$ m to 0.9 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 0.                                                |                                       | 0.                              |                                       |
| 250   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 350   | 0.                                                |                                       | 5.5547456E-14                   | -1.3255336E 01                        |
| 400   | 9.4354839E 07                                     | 7.9747642E 00                         | 2.1510862E-11                   | -1.0667342E 01                        |
| 450   | 9.1232518E 09                                     | 9.9601496E 00                         | 2.0741038E-09                   | -8.6831696E 00                        |
| 500   | 3.5605325E 11                                     | 1.1551515E 01                         | 3.1215655E-08                   | -7.0903603E 00                        |
| 600   | 8.9209095E 13                                     | 1.3950409E 01                         | 2.0488469E-05                   | -4.6884905E 00                        |
| 700   | 4.7405431E 15                                     | 1.5675828E 01                         | 1.0963447E-03                   | -2.9600529E 00                        |
| 800   | 9.5278941E 16                                     | 1.6978997E 01                         | 2.2190424E-02                   | -1.6538344E 00                        |
| 900   | 9.9943618E 17                                     | 1.7999755E 01                         | 2.3441637E-01                   | -6.3001113E-01                        |
| 1000  | 6.6398131E 18                                     | 1.8822156E 01                         | 1.5683722E 00                   | 1.9544914E-01                         |
| 1500  | 2.1640160E 21                                     | 2.1335260E 01                         | 5.2840009E 02                   | 2.7229629E 00                         |
| 2000  | 4.2820927E 22                                     | 2.2631656E 01                         | 1.0741001E 04                   | 4.0310448E 00                         |
| 2500  | 2.6833137E 23                                     | 2.3428671E 01                         | 6.8688390E 04                   | 4.8369834E 00                         |
| 3000  | 9.3353976E 23                                     | 2.3970133E 01                         | 2.4262300E 05                   | 5.3849320E 00                         |
| 3500  | 2.3061577E 24                                     | 2.4362889E 01                         | 6.0626528E 05                   | 5.7826627E 00                         |
| 4000  | 4.5863338E 24                                     | 2.4661466E 01                         | 1.2163649E 06                   | 6.0950639E 00                         |
| 4500  | 7.8825315E 24                                     | 2.4896666E 01                         | 2.1050374E 06                   | 6.3232598E 00                         |
| 5000  | 1.2223893E 25                                     | 2.5087209E 01                         | 3.2824059E 06                   | 6.5161923E 00                         |
| 6000  | 2.3904131E 25                                     | 2.5379473E 01                         | 6.4711688E 06                   | 6.8109828E 00                         |
| 7000  | 3.9114771E 25                                     | 2.5592341E 01                         | 1.0648637E 07                   | 7.0272941E 00                         |
| 8000  | 5.7220697E 25                                     | 2.5757553E 01                         | 1.5641470E 07                   | 7.1942776E 00                         |
| 9000  | 7.7645472E 25                                     | 2.5890116E 01                         | 2.1289845E 07                   | 7.3281725E 00                         |
| 10000 | 9.9917392E 25                                     | 2.5999641E 01                         | 2.7461841E 07                   | 7.4387297E 00                         |
| 290   | 0.                                                |                                       | 0.                              |                                       |
| 295   | 0.                                                |                                       | 0.                              |                                       |
| 299   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 0.                                                |                                       | 0.                              |                                       |
| 301   | 0.                                                |                                       | 0.                              |                                       |
| 305   | 0.                                                |                                       | 0.                              |                                       |
| 310   | 0.                                                |                                       | 0.                              |                                       |
| 2040  | 5.1177548E 22                                     | 2.2709079E 01                         | 1.2860939E 04                   | 4.1092727E 00                         |
| 2870  | 7.0258952E 23                                     | 2.3846702E 01                         | 1.8195574E 05                   | 5.2599658E 00                         |
| 5600  | 1.8773669E 25                                     | 2.5273549E 01                         | 5.0676941E 06                   | 6.7048104E 00                         |
| 6100  | 2.5276769E 25                                     | 2.5402722E 01                         | 6.8472415E 06                   | 6.8355157E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 0.9 $\mu\text{m}$  to 1.0 $\mu\text{m}$

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|---------------------------------------|
| 50      | 0.                                                                         |                                       | 0.                                                       |                                       |
| 100     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 150     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 200     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 250     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 300     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 350     | 2.1070124E 07                                                              | 7.3236671E 00                         | 4.3141857E-12                                            | -1.1365101E 01                        |
| 400     | 4.1144428E 09                                                              | 9.6143111E 00                         | 8.3965012E-10                                            | -9.0759016E 00                        |
| 450     | 2.5043957E 11                                                              | 1.1398703E 01                         | 5.1211486E-08                                            | -7.2906327E 00                        |
| 500     | 6.7493587E 12                                                              | 1.2829262E 01                         | 1.3829950E-06                                            | -5.8591794E 00                        |
| 600     | 9.5708146E 14                                                              | 1.4980949E 01                         | 1.9678482E-04                                            | -3.7060084E 00                        |
| 700     | 3.3310823E 16                                                              | 1.6522585E 01                         | 6.8673819E-03                                            | -2.1632088E 00                        |
| 800     | 4.8040238E 17                                                              | 1.7681605E 01                         | 9.9251375E-02                                            | -1.0032635E 00                        |
| 900     | 3.8442177E 18                                                              | 1.8584808E 01                         | 7.9558836E-01                                            | -9.9311576E-02                        |
| 1000    | 2.0347369E 19                                                              | 1.9308508E 01                         | 4.2170118E 00                                            | 6.2500482E-01                         |
| 1500    | 3.0616221E 21                                                              | 2.1485952E 01                         | 6.3734112E 02                                            | 2.8043720E 00                         |
| 2000    | 3.7892972E 22                                                              | 2.2578559E 01                         | 7.9062769E 03                                            | 3.8979720E 00                         |
| 2500    | 1.7219077E 23                                                              | 2.3236010E 01                         | 3.5976797E 04                                            | 4.5560225E 00                         |
| 3000    | 4.7432041E 23                                                              | 2.3676072E 01                         | 9.9193052E 04                                            | 4.9964812E 00                         |
| 3500    | 9.8254069E 23                                                              | 2.3992350E 01                         | 2.0560762E 05                                            | 5.3130392E 00                         |
| 4000    | 1.7046869E 24                                                              | 2.4231644E 01                         | 3.5689343E 05                                            | 5.5525366E 00                         |
| 4500    | 2.6295176E 24                                                              | 2.4419876E 01                         | 5.5071391E 05                                            | 5.7409261E 00                         |
| 5000    | 3.7369743E 24                                                              | 2.4572520E 01                         | 7.8287413E 05                                            | 5.8936920E 00                         |
| 6000    | 6.4104981E 24                                                              | 2.4806892E 01                         | 1.3435077E 06                                            | 6.1282402E 00                         |
| 7000    | 9.5619619E 24                                                              | 2.4980547E 01                         | 2.0454555E 06                                            | 6.3020160E 00                         |
| 8000    | 1.3065256E 25                                                              | 2.5116118E 01                         | 2.7395146E 06                                            | 6.4376736E 00                         |
| 9000    | 1.6829737E 25                                                              | 2.5226077E 01                         | 3.5293776E 06                                            | 6.5476982E 00                         |
| 10000   | 2.0791154E 25                                                              | 2.5317878E 01                         | 4.3606363E 06                                            | 6.6395499E 00                         |
| 290     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 295     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 299     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 300     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 301     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 305     | 0.                                                                         |                                       | 0.                                                       |                                       |
| 310     | 0.                                                                         |                                       | 1.1395084E-14                                            | -1.3943283E 01                        |
| 2040    | 4.3947281E 22                                                              | 2.2642932E 01                         | 9.1707345E 03                                            | 3.9624041E 00                         |
| 2870    | 3.7687795E 23                                                              | 2.3576201E 01                         | 7.8799006E 04                                            | 4.8965208E 00                         |
| 5600    | 5.2753230E 24                                                              | 2.4722249E 01                         | 1.1054405E 06                                            | 6.0435354E 00                         |
| 6100    | 6.7065312E 24                                                              | 2.4826493E 01                         | 1.4055957E 06                                            | 6.1478605E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 1.0 $\mu$ m to 1.1 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                                   | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$              | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------------|---------------------------------------|------------------------------------|---------------------------------------|
| °K    | Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> |                                       | W m <sup>-2</sup> sr <sup>-1</sup> |                                       |
| 50    | 0.                                                      |                                       | 0.                                 |                                       |
| 100   | 0.                                                      |                                       | 0.                                 |                                       |
| 150   | 0.                                                      |                                       | 0.                                 |                                       |
| 200   | 0.                                                      |                                       | 0.                                 |                                       |
| 250   | 0.                                                      |                                       | 0.                                 |                                       |
| 300   | 1.2062403E 06                                           | 6.0814341E 00                         | 2.2987068E-13                      | -1.2638516E 01                        |
| 350   | 7.2596154E 08                                           | 8.8609136E 00                         | 1.3459148E-10                      | -9.8709824E 00                        |
| 400   | 8.7861511E 10                                           | 1.0943799E 01                         | 1.6308550E-08                      | -7.7875847E 00                        |
| 450   | 3.6896572E 12                                           | 1.2566986E 01                         | 6.8626390E-07                      | -6.1635089E 00                        |
| 500   | 7.3789499E 13                                           | 1.3867995E 01                         | 1.3748475E-05                      | -4.8617455E 00                        |
| 600   | 6.6663552E 15                                           | 1.5823921E 01                         | 1.2456529E-03                      | -2.9046030E 00                        |
| 700   | 1.6767796E 17                                           | 1.7224476E 01                         | 3.1396316E-02                      | -1.5031213E 00                        |
| 800   | 1.8918848E 18                                           | 1.8276895E 01                         | 3.5483076E-01                      | -4.4997874E-01                        |
| 900   | 1.2493165E 19                                           | 1.9096673E 01                         | 2.3462670E 00                      | 3.7037743E-01                         |
| 1000  | 5.6661599E 19                                           | 1.9753289E 01                         | 1.0652835E 01                      | 1.0274652E 00                         |
| 1500  | 5.3399567E 21                                           | 2.1727538E 01                         | 1.0073169E 03                      | 3.0031661E 00                         |
| 2000  | 5.2187318E 22                                           | 2.2717505E 01                         | 9.8612804E 03                      | 3.9939333E 00                         |
| 2500  | 2.0582934E 23                                           | 2.3313507E 01                         | 3.8933090E 04                      | 4.5903189E 00                         |
| 3000  | 5.1636872E 23                                           | 2.3712950E 01                         | 9.7737931E 04                      | 4.9900631E 00                         |
| 3500  | 1.0016436E 24                                           | 2.4000713E 01                         | 1.8967952E 05                      | 5.2780205E 00                         |
| 4000  | 1.6560068E 24                                           | 2.4219062E 01                         | 3.1370297E 05                      | 5.4965187E 00                         |
| 4500  | 2.4625323E 24                                           | 2.4391382E 01                         | 4.6660729E 05                      | 5.5689516E 00                         |
| 5000  | 3.4009711E 24                                           | 2.4531603E 01                         | 6.4455591E 05                      | 5.8092607E 00                         |
| 6000  | 5.5972799E 24                                           | 2.4747977E 01                         | 1.0611138E 06                      | 6.0257620E 00                         |
| 7000  | 8.1159964E 24                                           | 2.4909342E 01                         | 1.5389110E 06                      | 6.1872135E 00                         |
| 8000  | 1.0865668E 25                                           | 2.5036056E 01                         | 2.0605850E 06                      | 6.3139905E 00                         |
| 9000  | 1.3793675E 25                                           | 2.5139365E 01                         | 2.6142430E 06                      | 6.4173460E 00                         |
| 10000 | 1.6826981E 25                                           | 2.5226006E 01                         | 3.1917104E 06                      | 6.5040236E 00                         |
| 290   | 0.                                                      |                                       | 4.3634774E-14                      | -1.3360167E 01                        |
| 295   | 0.                                                      |                                       | 1.0279015E-13                      | -1.2988048E 01                        |
| 299   | 0.                                                      |                                       | 1.9723568E-13                      | -1.2705014E 01                        |
| 300   | 1.2062408E 06                                           | 6.0814341E 00                         | 2.2987068E-13                      | -1.2638516E 01                        |
| 301   | 1.2183435E 06                                           | 6.0857698E 00                         | 2.6333590E-13                      | -1.2579490E 01                        |
| 305   | 2.5351273E 06                                           | 6.4039999E 00                         | 4.8048806E-13                      | -1.2318317E 01                        |
| 310   | 3.9927912E 06                                           | 6.6012766E 00                         | 9.6858208E-13                      | -1.2013864E 01                        |
| 2040  | 5.9689359E 22                                           | 2.2775897E 01                         | 1.1279993E 04                      | 4.0523089E 00                         |
| 2870  | 4.1901894E 23                                           | 2.3622233E 01                         | 7.9299655E 04                      | 4.8992713E 00                         |
| 5600  | 4.6737396E 24                                           | 2.4669665E 01                         | 8.8594080E 05                      | 5.9474047E 00                         |
| 6100  | 5.8364259E 24                                           | 2.4766147E 01                         | 1.1064761E 06                      | 6.0439421E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 1.1 $\mu$ m to 1.2 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50      | 0.                                                                               |                                         | 0.                                                          |                                         |
| 100     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 150     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 200     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 250     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 300     | 3.8599707E 07                                                                    | 7.5865840E 00                           | 6.5763005E-12                                               | -1.1182018E 01                          |
| 350     | 1.3479133E 10                                                                    | 1.0129662E 01                           | 2.2892773E-09                                               | -8.5403017E 00                          |
| 400     | 1.0947820E 12                                                                    | 1.2039328E 01                           | 1.8633208E-07                                               | -6.7297124E 00                          |
| 450     | 3.3686001E 13                                                                    | 1.3527449E 01                           | 5.7431645E-06                                               | -5.2408488E 00                          |
| 500     | 5.2459749E 14                                                                    | 1.4719826E 01                           | 8.9568079E-05                                               | -4.0478468E 00                          |
| 600     | 3.2486663E 16                                                                    | 1.6511705E 01                           | 5.5592927E-03                                               | -2.2549805E 00                          |
| 700     | 6.2254665E 17                                                                    | 1.7794172E 01                           | 1.0671484E-01                                               | -9.7177517E-01                          |
| 800     | 5.7210323E 18                                                                    | 1.8757474E 01                           | 9.8196776E-01                                               | -7.9027666E-03                          |
| 900     | 3.2180481E 19                                                                    | 1.9507592E 01                           | 5.5292599E 00                                               | 7.4266701E-01                           |
| 1000    | 1.2830794E 20                                                                    | 2.0108253E 01                           | 2.2064496E 01                                               | 1.3436940E 00                           |
| 1500    | 8.1924284E 21                                                                    | 2.1913413E 01                           | 1.4124420E 03                                               | 3.1499707E 00                           |
| 2000    | 6.5831988E 22                                                                    | 2.2818437E 01                           | 1.1364737E 04                                               | 4.0555595E 00                           |
| 2500    | 2.3103234E 23                                                                    | 2.3363672E 01                           | 3.9914544E 04                                               | 4.6011312E 00                           |
| 3000    | 5.3683463E 23                                                                    | 2.3729841E 01                           | 9.2793728E 04                                               | 4.9675186E 00                           |
| 3500    | 9.8704895E 23                                                                    | 2.3994339E 01                           | 1.7067493E 05                                               | 5.2321698E 00                           |
| 4000    | 1.5692362E 24                                                                    | 2.4195688E 01                           | 2.7141312E 05                                               | 5.4336309E 00                           |
| 4500    | 2.2653667E 24                                                                    | 2.4355138E 01                           | 3.9189094E 05                                               | 5.5931653E 00                           |
| 5000    | 3.0572917E 24                                                                    | 2.4485337E 01                           | 5.2896757E 05                                               | 5.7234291E 00                           |
| 6000    | 4.8665856E 24                                                                    | 2.4687224E 01                           | 8.4219173E 05                                               | 5.9254110E 00                           |
| 7000    | 6.8978230E 24                                                                    | 2.4838712E 01                           | 1.1938862E 06                                               | 6.0769630E 00                           |
| 8000    | 9.0847282E 24                                                                    | 2.4958312E 01                           | 1.5725669E 06                                               | 6.1966092E 00                           |
| 9000    | 1.1383506E 25                                                                    | 2.5056276E 01                           | 1.9706431E 06                                               | 6.2946080E 00                           |
| 10000   | 1.3764759E 25                                                                    | 2.5138768E 01                           | 2.3830158E 06                                               | 6.3771269E 00                           |
|         |                                                                                  |                                         |                                                             |                                         |
| 290     | 8.7157430E 06                                                                    | 6.9403543E 00                           | 1.6057597E-12                                               | -1.1794319E 01                          |
| 295     | 1.9497783E 07                                                                    | 7.2899853E 00                           | 3.2892847E-12                                               | -1.1482898E 01                          |
| 299     | 3.4632339E 07                                                                    | 7.5394818E 00                           | 5.7395583E-12                                               | -1.1241122E 01                          |
| 300     | 3.8599707E 07                                                                    | 7.5865840E 00                           | 6.5763005E-12                                               | -1.1182018E 01                          |
| 301     | 4.3860366E 07                                                                    | 7.642072 E 00                           | 7.5354580E-12                                               | -1.1122890E 01                          |
| 305     | 7.4786257E 07                                                                    | 7.8739218E 00                           | 1.2866403E-11                                               | -1.0890543E 01                          |
| 310     | 1.4640234E 08                                                                    | 8.1655481E 00                           | 2.4624775E-11                                               | -1.0608628E 01                          |
| 2040    | 7.4434941E 22                                                                    | 2.2871777E 01                           | 1.2850865E 04                                               | 4.1089324E 00                           |
| 2870    | 4.4319289E 23                                                                    | 2.3646593E 01                           | 7.6598754E 04                                               | 4.8842216E 00                           |
| 5600    | 4.1115282E 24                                                                    | 2.4614003E 01                           | 7.1147019E 05                                               | 5.8521568E 00                           |
| 6100    | 5.0610383E 24                                                                    | 2.4704240E 01                           | 8.7585809E 05                                               | 5.9424338E 00                           |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 1.2 $\mu$ m to 1.3 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 0.                                                |                                       | 0.                              |                                       |
| 250   | 0.                                                |                                       | 0.                              |                                       |
| 300   | 7.0203218E 08                                     | 8.8463571E 00                         | 5.7837833E-14                   | -1.3237788E 01                        |
| 350   | 1.5563926E 11                                     | 1.1192119E 01                         | 1.0982822E-10                   | -9.9592861E 00                        |
| 400   | 9.0144955E 12                                     | 1.2954941E 01                         | 2.4406145E-08                   | -7.6125009E 00                        |
| 450   | 2.1291270E 14                                     | 1.4328202E 01                         | 1.4160395E-06                   | -5.8489247E 00                        |
| 500   | 2.6806996E 15                                     | 1.5428248E 01                         | 3.3493085E-05                   | -4.4750449E 00                        |
| 600   | 1.2045284E 17                                     | 1.7080817E 01                         | 4.2219861E-04                   | -3.3744832E 00                        |
| 700   | 1.8328392E 18                                     | 1.8263124E 01                         | 1.9005875E-02                   | -1.7211121E 00                        |
| 800   | 1.4155483E 19                                     | 1.9150925E 01                         | 2.8959268E-01                   | -5.3821242E-01                        |
| 900   | 6.9515606E 19                                     | 1.9842082E 01                         | 2.2389344E 00                   | 3.5004138E-01                         |
| 1000  | 2.4855498E 20                                     | 2.0395423E 01                         | 1.1004148E 01                   | 1.0415564E 00                         |
| 1500  | 1.1425112E 22                                     | 2.2057860E 01                         | 3.9371788E 01                   | 1.5951851E 00                         |
| 2000  | 7.7880535E 22                                     | 2.2891429E 01                         | 1.8134227E 03                   | 3.2584991E 00                         |
| 2500  | 2.4789316E 23                                     | 2.3394265E 01                         | 1.2373908E 04                   | 4.0925069E 00                         |
| 3000  | 5.4044761E 23                                     | 2.3732753E 01                         | 3.9409640E 04                   | 4.5956025E 00                         |
| 3500  | 1.4633198E 24                                     | 2.4165339E 01                         | 8.5952911E 04                   | 4.9342606E 00                         |
| 4000  | 9.5061802E 23                                     | 2.3978006E 01                         | 1.5122731E 05                   | 5.1796302E 00                         |
| 4500  | 1.4633198E 24                                     | 2.4165339E 01                         | 2.3283516E 05                   | 5.3670486E 00                         |
| 5000  | 2.0616094E 24                                     | 2.4314206E 01                         | 5.5159799E 05                   | 5.5159799E 00                         |
| 5500  | 2.7300957E 24                                     | 2.4436178E 01                         | 3.2808008E 05                   | 5.6380012E 00                         |
| 6000  | 2.7300957E 24                                     | 2.4436178E 01                         | 4.3451140E 05                   | 5.8280871E 00                         |
| 7000  | 4.2285550E 24                                     | 2.4626192E 01                         | 6.7311161E 05                   | 5.9715344E 00                         |
| 8000  | 5.8828857E 24                                     | 2.4769590E 01                         | 9.3655738E 05                   | 6.0853418E 00                         |
| 9000  | 7.6447375E 24                                     | 2.4883363E 01                         | 1.2171434E 06                   | 6.1789520E 00                         |
| 10000 | 9.4830118E 24                                     | 2.4976946E 01                         | 1.5099130E 06                   | 6.2580610E 00                         |
| 15000 | 1.1577183E 25                                     | 2.5056035E 01                         | 1.8115943E 06                   | 6.2580610E 00                         |
| 290   | 1.9176635E 08                                     | 8.2827770E 00                         | 2.9854912E-11                   | -1.0524984E 01                        |
| 295   | 3.7045788E 08                                     | 8.5687389E 00                         | 5.7889541E-11                   | -1.0237400E 01                        |
| 299   | 6.1860523E 08                                     | 8.7914137E 00                         | 9.6783549E-11                   | -1.0014198E 01                        |
| 300   | 7.0203218E 08                                     | 8.8463571E 00                         | 1.0982822E-10                   | -9.9592861E 00                        |
| 301   | 7.9557831E 08                                     | 8.9006829E 00                         | 1.2451737E-10                   | -9.9047701E 00                        |
| 305   | 1.3043230E 09                                     | 9.1153852E 00                         | 1.451737E-10                    | -9.847701E 00                         |
| 310   | 2.3743798E 09                                     | 9.3755503E 00                         | 2.0405794E-10                   | -9.6902466E 00                        |
| 315   | 4.3879477E 09                                     | 9.642261E 00                          | 3.7169623E-10                   | -9.4298120E 00                        |
| 2040  | 8.7213689E 22                                     | 2.2940584E 01                         | 1.3857609E 04                   | 4.1416893E 00                         |
| 2870  | 4.5259726E 23                                     | 2.3655712E 01                         | 7.1974899E 04                   | 4.8571811E 00                         |
| 5600  | 3.6069661E 24                                     | 2.4557142E 01                         | 5.7413225E 05                   | 5.7590120E 00                         |
| 6100  | 4.3879477E 24                                     | 2.4642261E 01                         | 6.9849333E 05                   | 5.8441623E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 1.3 $\mu$ m to 1.4 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50      | 0.                                                                               |                                         | 0.                                                          |                                         |
| 100     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 150     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 200     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 250     | 7.6786165E 06                                                                    | 6.8852830E 00                           | 1.0796396E-12                                               | -1.1966721E 01                          |
| 300     | 8.2169126E 09                                                                    | 9.9147087E 00                           | 1.1940683E-09                                               | -8.9229709E 00                          |
| 350     | 1.2387241E 12                                                                    | 1.2092974E 01                           | 1.8034181E-07                                               | -6.7439036E 00                          |
| 400     | 5.3627734E 13                                                                    | 1.3729389E 01                           | 7.8189422E-06                                               | -5.1068521E 00                          |
| 450     | 1.0089050E 15                                                                    | 1.5003850E 01                           | 1.4727359E-04                                               | -3.8318752E 00                          |
| 500     | 1.0580965E 16                                                                    | 1.6024525E 01                           | 1.5460541E-03                                               | -2.8107753E 00                          |
| 600     | 3.6094396E 17                                                                    | 1.7557440E 01                           | 5.2819511E-02                                               | -1.2772056E 00                          |
| 700     | 4.5062228E 18                                                                    | 1.8653813E 01                           | 6.6015648E-01                                               | -1.8035311E-01                          |
| 800     | 2.9984287E 19                                                                    | 1.9476894E 01                           | 4.3963583E 00                                               | 6.4309309E-01                           |
| 900     | 1.3108434E 20                                                                    | 2.0117550E 01                           | 1.9232552E 01                                               | 1.2840369E 00                           |
| 1000    | 4.2696031E 20                                                                    | 2.0630388E 01                           | 6.2676466E 01                                               | 1.7971045E 00                           |
| 1500    | 1.4820881E 22                                                                    | 2.2170874E 01                           | 2.1791592E 03                                               | 3.3382890E 00                           |
| 2000    | 8.7829032E 22                                                                    | 2.2943638E 01                           | 1.2924123E 04                                               | 4.1114011E 00                           |
| 2500    | 2.5738741E 23                                                                    | 2.3410587E 01                           | 3.7892654E 04                                               | 4.5785550E 00                           |
| 3000    | 5.3182834E 23                                                                    | 2.3725771E 01                           | 7.8319824E 04                                               | 4.8938717E 00                           |
| 3500    | 9.0133644E 23                                                                    | 2.3954887E 01                           | 1.3276349E 05                                               | 5.1230786E 00                           |
| 4000    | 1.3505266E 24                                                                    | 2.4130503E 01                           | 1.9895790E 05                                               | 5.2987612E 00                           |
| 4500    | 1.8644094E 24                                                                    | 2.4270541E 01                           | 2.7469402E 05                                               | 5.4388492E 00                           |
| 5000    | 2.4302905E 24                                                                    | 2.4385658E 01                           | 3.5810040E 05                                               | 5.5540048E 00                           |
| 6000    | 3.6794937E 24                                                                    | 2.4565788E 01                           | 5.4223858E 05                                               | 5.7341905E 00                           |
| 7000    | 5.0402685E 24                                                                    | 2.4702454E 01                           | 7.4283779E 05                                               | 5.8708940E 00                           |
| 8000    | 6.4769863E 24                                                                    | 2.4811373E 01                           | 9.5464224E 05                                               | 5.9798407E 00                           |
| 9000    | 7.9672091E 24                                                                    | 2.4901306E 01                           | 1.1743416E 06                                               | 6.0697945E 00                           |
| 10000   | 9.4963286E 24                                                                    | 2.4977556E 01                           | 1.3997807E 06                                               | 6.1460600E 00                           |
|         |                                                                                  |                                         |                                                             |                                         |
| 290     | 2.4515840E 09                                                                    | 9.3894469E 00                           | 3.5615575E-10                                               | -9.4463601E 00                          |
| 295     | 4.5338081E 09                                                                    | 9.6564631E 00                           | 6.5881008E-10                                               | -9.1812398E 00                          |
| 299     | 7.3074236E 09                                                                    | 9.8637643E 00                           | 1.0618479E-09                                               | -8.9739377E 00                          |
| 300     | 8.2169126E 09                                                                    | 9.9147087E 00                           | 1.1940683E-09                                               | -8.9229709E 00                          |
| 301     | 9.2326070E 09                                                                    | 9.9653244E 00                           | 1.3417166E-09                                               | -8.8723392E 00                          |
| 305     | 1.4603601E 10                                                                    | 1.0164460E 01                           | 2.1226574E-09                                               | -8.6731201E 00                          |
| 310     | 2.5480663E 10                                                                    | 1.0406211E 01                           | 3.7044091E-09                                               | -8.4312776E 00                          |
| 2040    | 9.7553807E 22                                                                    | 2.2989244E 01                           | 1.4355803E 04                                               | 4.1570275E 00                           |
| 2870    | 4.5076014E 23                                                                    | 2.3653945E 01                           | 6.6376770E 04                                               | 4.8220162E 00                           |
| 5600    | 3.1638057E 24                                                                    | 2.4500210E 01                           | 4.6622180E 05                                               | 5.6685926E 00                           |
| 6100    | 3.8112758E 24                                                                    | 2.4581070E 01                           | 5.6166475E 05                                               | 5.7494772E 00                           |

K.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 1.4 $\mu$ m to 1.5 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$        | $\log_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$ | $\log_{10} N_{0,\Delta\lambda}$ |
|-------|------------------------------|---------------------------------|-----------------------|---------------------------------|
| °K    | Quanta $s^{-1}m^{-2}sr^{-1}$ |                                 | $W m^{-2}sr^{-1}$     |                                 |
| 50    | 0.                           |                                 | 0.                    |                                 |
| 100   | 0.                           |                                 | 0.                    |                                 |
| 150   | 0.                           |                                 | 0.                    |                                 |
| 200   | 0.                           |                                 | 0.                    |                                 |
| 250   | 9.7727846E 07                | 7.9900184E 00                   | 1.3278653E-11         | -1.0876848E 01                  |
| 300   | 6.7948753E 10                | 1.0832181E 01                   | 9.2148460E-09         | -8.0355120E 00                  |
| 350   | 7.3234118E 12                | 1.2864713E 01                   | 9.9471911E-07         | -6.0022995E 00                  |
| 400   | 2.4618303E 14                | 1.4391258E 01                   | 3.3479718E-05         | -4.4752182E 00                  |
| 450   | 3.8009799E 15                | 1.5579896E 01                   | 5.1742790E-04         | -3.2861502E 00                  |
| 500   | 3.4014457E 16                | 1.6531664E 01                   | 4.6341472E-03         | -2.3347302E 00                  |
| 600   | 9.1364931E 17                | 1.7960780E 01                   | 1.2463071E-01         | -9.0437495E-01                  |
| 700   | 9.6069003E 18                | 1.8982673E 01                   | 1.3119326E 00         | 1.1791152E-01                   |
| 800   | 5.6195946E 19                | 1.9749705E 01                   | 7.6778626E 00         | 8.8524033E-01                   |
| 900   | 2.2215386E 20                | 2.0346654E 01                   | 3.0368425E 01         | 1.4824223E 00                   |
| 1000  | 6.6750500E 20                | 2.0824454E 01                   | 9.1287271E 01         | 1.9604103E 00                   |
| 1500  | 1.8181199E 22                | 2.2259622E 01                   | 2.4896747E 03         | 3.3961426E 00                   |
| 2000  | 9.5521908E 22                | 2.2980103E 01                   | 1.3088394E 04         | 4.1169030E 00                   |
| 2500  | 2.6083136E 23                | 2.3416360E 01                   | 3.5753906E 04         | 4.5533235E 00                   |
| 3000  | 5.1488150E 23                | 2.3711707E 01                   | 7.0595414E 04         | 4.8487765E 00                   |
| 3500  | 9.4554394E 23                | 2.3927136E 01                   | 1.1595193E 05         | 5.0642780E 00                   |
| 4000  | 1.2383360E 24                | 2.4092838E 01                   | 1.6983721E 05         | 5.2307329E 00                   |
| 4500  | 1.6804186E 24                | 2.4225417E 01                   | 2.3048957E 05         | 5.3626513E 00                   |
| 5000  | 2.1614647E 24                | 2.4334748E 01                   | 2.9649169E 05         | 5.4720126E 00                   |
| 6000  | 3.2172421E 24                | 2.4576538E 01                   | 4.4039893E 05         | 5.6438463E 00                   |
| 7000  | 4.3473136E 24                | 2.4637521E 01                   | 5.9546961E 05         | 5.7748597E 00                   |
| 8000  | 5.5251225E 24                | 2.4742342E 01                   | 7.5805734E 05         | 5.8797022E 00                   |
| 9000  | 6.7432222E 24                | 2.4829189E 01                   | 9.2590374E 05         | 5.9665658E 00                   |
| 10000 | 7.9990221E 24                | 2.4903037E 01                   | 1.0975544E 06         | 6.0404261E 00                   |
|       |                              |                                 |                       |                                 |
| 290   | 2.1930357E 10                | 1.0342035E 01                   | 2.9798274E-09         | -8.5258089E 00                  |
| 295   | 3.9016211E 10                | 1.0591245E 01                   | 5.2901976E-09         | -8.2765281E 00                  |
| 299   | 6.0402760E 10                | 1.0784637E 01                   | 9.2589778E-09         | -8.0830737E 00                  |
| 300   | 6.7948753E 10                | 1.0832181E 01                   | 9.2148460E-09         | -8.0355120E 00                  |
| 301   | 7.5756599E 10                | 1.0879420E 01                   | 1.0273908E-08         | -7.9882644E 00                  |
| 305   | 1.1621657E 11                | 1.1065268E 01                   | 1.5763212E-08         | -7.8023553E 00                  |
| 310   | 1.9537393E 11                | 1.1290866E 01                   | 2.6504486E-08         | -7.5766807E 00                  |
| 2040  | 1.0535775E 23                | 2.3022667E 01                   | 1.4437190E 04         | 4.1594827E 00                   |
| 2870  | 4.4087312E 23                | 2.3644314E 01                   | 6.0444845E 04         | 4.7813593E 00                   |
| 5600  | 2.7790014E 24                | 2.4443889E 01                   | 3.8122533E 05         | 5.5811818E 00                   |
| 6100  | 3.3201363E 24                | 2.4521155E 01                   | 4.5547851E 05         | 5.6584679E 00                   |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 1.5 $\mu$ m to 2.0 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 0.                                                |                                       | 0.                              |                                       |
| 100   | 0.                                                |                                       | 0.                              |                                       |
| 150   | 0.                                                |                                       | 0.                              |                                       |
| 200   | 5.2009971E 08                                     | 8.7210681E 00                         | 5.3822561E-11                   | -1.0269036E 01                        |
| 250   | 8.2207127E 11                                     | 1.1948448E 01                         | 9.1428748E-08                   | -7.0385840E 00                        |
| 300   | 1.5070945E 14                                     | 1.4116307E 01                         | 1.3569061E-05                   | -4.8674502E 00                        |
| 350   | 4.7477030E 15                                     | 1.5676484E 01                         | 4.9653344E-04                   | -3.3040515E 00                        |
| 400   | 7.1651340E 16                                     | 1.6855224E 01                         | 7.5473978E-03                   | -2.1222028E 00                        |
| 450   | 6.0043393E 17                                     | 1.7778465E 01                         | 6.3677132E-02                   | -1.1960165E 00                        |
| 500   | 3.3261216E 18                                     | 1.8521938E 01                         | 3.5498410E-01                   | -4.4979109E-01                        |
| 600   | 4.4348453E 19                                     | 1.9646878E 01                         | 4.7866909E 00                   | 6.8003539E-01                         |
| 700   | 2.8762833E 20                                     | 2.0458831E 01                         | 3.1338933E 01                   | 1.4960842E 00                         |
| 800   | 1.1833792E 21                                     | 2.1073124E 01                         | 1.2995229E 02                   | 2.1137673E 00                         |
| 900   | 3.5843056E 21                                     | 2.1554405E 01                         | 3.9620016E 02                   | 2.5979147E 00                         |
| 1000  | 8.7462170E 21                                     | 2.1941820E 01                         | 9.7211937E 02                   | 2.9877196E 00                         |
| 1500  | 1.3155533E 23                                     | 2.3119108E 01                         | 1.4881246E 04                   | 4.1726394E 00                         |
| 2000  | 5.2514611E 23                                     | 2.3720280E 01                         | 5.9941723E 04                   | 4.7777293E 00                         |
| 2500  | 1.2289964E 24                                     | 2.4089550E 01                         | 1.4102380E 05                   | 5.1492925E 00                         |
| 3000  | 2.2021712E 24                                     | 2.4342851E 01                         | 2.5354913E 05                   | 5.4040622E 00                         |
| 3500  | 3.3870932E 24                                     | 2.4529827E 01                         | 3.9088115E 05                   | 5.5920448E 00                         |
| 4000  | 4.7335616E 24                                     | 2.4675188E 01                         | 5.4718124E 05                   | 5.7381312E 00                         |
| 4500  | 6.2029637E 24                                     | 2.4792599E 01                         | 7.1793771E 05                   | 5.8560868E 00                         |
| 5000  | 7.7667171E 24                                     | 2.4890237E 01                         | 8.9980136E 05                   | 5.9541467E 00                         |
| 6000  | 1.1098701E 25                                     | 2.5045272E 01                         | 1.2876230E 06                   | 6.1097888E 00                         |
| 7000  | 1.4618218E 25                                     | 2.5164894E 01                         | 1.6975603E 06                   | 6.2298253E 00                         |
| 8000  | 1.8261691E 25                                     | 2.5261541E 01                         | 2.1221254E 06                   | 6.3267711E 00                         |
| 9000  | 2.1990836E 25                                     | 2.5342242E 01                         | 2.5568050E 06                   | 6.4076977E 00                         |
| 10000 | 2.5781448E 25                                     | 2.5411307E 01                         | 2.9987435E 06                   | 6.4769394E 00                         |
|       |                                                   |                                       |                                 |                                       |
| 290   | 5.5122325E 13                                     | 1.3741328E 01                         | 5.7137008E-06                   | -5.2430825E 00                        |
| 295   | 8.5491828E 13                                     | 1.3931925E 01                         | 8.8683175E-06                   | -5.0521588E 00                        |
| 299   | 1.2020232E 14                                     | 1.4079913E 01                         | 1.2476434E-05                   | -4.9039096E 00                        |
| 300   | 1.3070945E 14                                     | 1.4116307E 01                         | 1.3569061E-05                   | -4.8674502E 00                        |
| 301   | 1.4205769E 14                                     | 1.4152465E 01                         | 1.4749345E-05                   | -4.8312272E 00                        |
| 305   | 1.9714145E 14                                     | 1.4294778E 01                         | 2.0480777E-05                   | -4.6886536E 00                        |
| 310   | 2.9350887E 14                                     | 1.4467621E 01                         | 3.0515098E-05                   | -4.5154852E 00                        |
| 2040  | 5.7029441E 23                                     | 2.3756099E 01                         | 6.5129263E 04                   | 4.8137763E 00                         |
| 2870  | 1.9264959E 24                                     | 2.4284768E 01                         | 2.2154191E 05                   | 5.3456519E 00                         |
| 5600  | 9.7385836E 24                                     | 2.4983496E 01                         | 1.1292732E 06                   | 6.0527990E 00                         |
| 6100  | 1.1443537E 25                                     | 2.5059560E 01                         | 1.3277773E 06                   | 6.1231253E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 2.0 $\mu$ m to 2.5 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50      | 0.                                                                               |                                         | 0.                                                          |                                         |
| 100     | 0.                                                                               |                                         | 0.                                                          |                                         |
| 150     | 2.2767796E 07                                                                    | 7.3573210E 00                           | 1.8683240E-12                                               | -1.1728548E 01                          |
| 200     | 4.5422027E 11                                                                    | 1.1657266E 01                           | 3.7429970E-08                                               | -7.4267805E 00                          |
| 250     | 1.8176937E 14                                                                    | 1.4259521E 01                           | 1.5110288E-05                                               | -4.8207273E 00                          |
| 300     | 1.0211642E 16                                                                    | 1.6009095E 01                           | 8.5567104E-04                                               | -3.0676932E 00                          |
| 350     | 1.8547347E 17                                                                    | 1.7268282E 01                           | 1.5651213E-02                                               | -1.8054520E 00                          |
| 400     | 1.6555283E 18                                                                    | 1.8218936E 01                           | 1.4055843E-01                                               | -8.5214309E-01                          |
| 450     | 9.1743186E 18                                                                    | 1.8962574E 01                           | 7.8304152E-01                                               | -1.0621520E-01                          |
| 500     | 3.6343140E 19                                                                    | 1.9560422E 01                           | 3.1160844E 00                                               | 4.9360921E-01                           |
| 600     | 2.9009238E 20                                                                    | 2.0462536E 01                           | 2.5056284E 01                                               | 1.3989167E 00                           |
| 700     | 1.2916648E 21                                                                    | 2.1111150E 01                           | 1.1219310E 02                                               | 2.0499662E 00                           |
| 800     | 3.9823103E 21                                                                    | 2.1600135E 01                           | 3.4741703E 02                                               | 2.5408511E 00                           |
| 900     | 9.5962733E 21                                                                    | 2.1982102E 01                           | 8.4010046E 02                                               | 2.9243312E 00                           |
| 1000    | 1.9447200E 22                                                                    | 2.2288857E 01                           | 1.7073095E 03                                               | 3.2323123E 00                           |
| 1500    | 1.6548018E 23                                                                    | 2.3218746E 01                           | 1.4652084E 04                                               | 4.1658994E 00                           |
| 2000    | 4.9634937E 23                                                                    | 2.3695787E 01                           | 4.4129447E 04                                               | 4.6447285E 00                           |
| 2500    | 9.8293080E 23                                                                    | 2.3992479E 01                           | 8.7586277E 04                                               | 4.9424361E 00                           |
| 3000    | 1.5815198E 24                                                                    | 2.4199075E 01                           | 1.4114781E 05                                               | 5.1496742E 00                           |
| 3500    | 2.2588286E 24                                                                    | 2.4353883E 01                           | 2.0179950E 05                                               | 5.3049201E 00                           |
| 4000    | 2.9917852E 24                                                                    | 2.4475930E 01                           | 2.6747419E 05                                               | 5.4272819E 00                           |
| 4500    | 3.7649820E 24                                                                    | 2.4575763E 01                           | 3.3678329E 05                                               | 5.5273505E 00                           |
| 5000    | 4.5679678E 24                                                                    | 2.4659723E 01                           | 4.0878400E 05                                               | 5.6114939E 00                           |
| 6000    | 6.2364673E 24                                                                    | 2.4754939E 01                           | 5.5843725E 05                                               | 5.7469744E 00                           |
| 7000    | 7.9607759E 24                                                                    | 2.4900754E 01                           | 7.1313656E 05                                               | 5.8531727E 00                           |
| 8000    | 9.7211481E 24                                                                    | 2.4987717E 01                           | 8.7109743E 05                                               | 5.9400668E 00                           |
| 9000    | 1.1506083E 25                                                                    | 2.5060927E 01                           | 1.0312801E 06                                               | 6.0133767E 00                           |
| 10000   | 1.3308463E 25                                                                    | 2.5124128E 01                           | 1.1930409E 06                                               | 6.0766554E 00                           |
|         |                                                                                  |                                         |                                                             |                                         |
| 290     | 5.0865445E 15                                                                    | 1.5706423E 01                           | 4.2557267E-04                                               | -3.3710263E 00                          |
| 295     | 7.2488102E 15                                                                    | 1.5860267E 01                           | 6.0694568E-04                                               | -3.2168502E 00                          |
| 299     | 9.5437510E 15                                                                    | 1.5970719E 01                           | 7.9958574E-04                                               | -3.0971350E 00                          |
| 300     | 1.0211642E 16                                                                    | 1.6009095E 01                           | 8.5567104E-04                                               | -3.0676932E 00                          |
| 301     | 1.0921475E 16                                                                    | 1.6039281E 01                           | 9.1528776E-04                                               | -3.0384423E 00                          |
| 305     | 1.4228298E 16                                                                    | 1.6153153E 01                           | 1.1931313E-03                                               | -2.9233118E 00                          |
| 310     | 1.9619542E 16                                                                    | 1.6292667E 01                           | 1.6463491E-03                                               | -2.7834781E 00                          |
| 2040    | 5.3014584E 23                                                                    | 2.3724395E 01                           | 4.7145294E 04                                               | 4.6734384E 00                           |
| 2870    | 1.4171488E 24                                                                    | 2.4151415E 01                           | 1.2643648E 05                                               | 5.1018724E 00                           |
| 5600    | 5.5608396E 24                                                                    | 2.4745140E 01                           | 4.9783211E 05                                               | 5.6970829E 00                           |
| 6100    | 6.4068046E 24                                                                    | 2.4806641E 01                           | 5.7371786E 05                                               | 5.7586984E 00                           |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 2.5 $\mu$ m to 3.0 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1}m^{-2}sr^{-1}$ | $\log_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$W m^{-2}sr^{-1}$ | $\log_{10} N_{0,\Delta\lambda}$ |
|---------|-------------------------------------------------------|---------------------------------|--------------------------------------------|---------------------------------|
| 50      | 0.                                                    |                                 | 0.                                         |                                 |
| 100     | 0.                                                    |                                 | 0.                                         |                                 |
| 150     | 9.5906701E 09                                         | 9.9818491E 00                   | 6.5597848E-10                              | -9.1831105E 00                  |
| 200     | 3.8296767E 13                                         | 1.3583162E 01                   | 2.6449038E-06                              | -5.5775902E 00                  |
| 250     | 5.8025442E 15                                         | 1.5763618E 01                   | 4.0399699E-04                              | -3.3936219E 00                  |
| 300     | 1.6906331E 17                                         | 1.7228049E 01                   | 1.1848144E-02                              | -1.9263497E 00                  |
| 350     | 1.9067999E 18                                         | 1.8280305E 01                   | 1.3433584E-01                              | -8.7180809E-01                  |
| 400     | 1.1838051E 19                                         | 1.9073280E 01                   | 8.3756367E-01                              | -7.6982164E-02                  |
| 450     | 4.9254113E 19                                         | 1.9692443E 01                   | 3.4969992E 00                              | 5.4369554E-01                   |
| 500     | 1.5465559E 20                                         | 2.0189366E 01                   | 1.1012219E 01                              | 1.0418748E 00                   |
| 600     | 8.6607263E 20                                         | 2.0937554E 01                   | 6.1945827E 01                              | 1.7920121E 00                   |
| 700     | 2.9799512E 21                                         | 2.1474209E 01                   | 2.1384409E 02                              | 2.3300973E 00                   |
| 800     | 7.5532357E 21                                         | 2.1878133E 01                   | 5.4338605E 02                              | 2.7351085E 00                   |
| 900     | 1.5609300E 22                                         | 2.2193383E 01                   | 1.1251458E 03                              | 3.0512088E 00                   |
| 1000    | 2.7959148E 22                                         | 2.2446524E 01                   | 2.0184994E 03                              | 3.3050287E 00                   |
| 1500    | 1.6456492E 23                                         | 2.3216337E 01                   | 1.1935405E 04                              | 4.0768372E 00                   |
| 2000    | 4.1332883E 23                                         | 2.3616295E 01                   | 3.0042201E 04                              | 4.4777318E 00                   |
| 2500    | 7.3968345E 23                                         | 2.3869046E 01                   | 5.3827911E 04                              | 4.7310076E 00                   |
| 3000    | 1.1162497E 24                                         | 2.4047761E 01                   | 8.1293103E 04                              | 4.9100537E 00                   |
| 3500    | 1.5258323E 24                                         | 2.4183507E 01                   | 1.1117937E 05                              | 5.0460243E 00                   |
| 4000    | 1.9578701E 24                                         | 2.4291784E 01                   | 1.4271299E 05                              | 5.1544635E 00                   |
| 4500    | 2.4057210E 24                                         | 2.4381245E 01                   | 1.7540700E 05                              | 5.2440469E 00                   |
| 5000    | 2.8650640E 24                                         | 2.4457134E 01                   | 2.0894448E 05                              | 5.3200309E 00                   |
| 6000    | 3.8074808E 24                                         | 2.4580638E 01                   | 2.7776191E 05                              | 5.4436727E 00                   |
| 7000    | 4.7708105E 24                                         | 2.4678592E 01                   | 3.4811386E 05                              | 5.5417213E 00                   |
| 8000    | 5.7474898E 24                                         | 2.4759478E 01                   | 4.1944646E 05                              | 5.6226766E 00                   |
| 9000    | 6.7331998E 24                                         | 2.4828221E 01                   | 4.9144220E 05                              | 5.6914725E 00                   |
| 10000   | 7.7252924E 24                                         | 2.4887915E 01                   | 5.6390666E 05                              | 5.7512073E 00                   |
|         |                                                       |                                 |                                            |                                 |
| 290     | 9.4377029E 16                                         | 1.6974866E 01                   | 6.6061358E-03                              | -2.1800525E 00                  |
| 295     | 1.2693038E 17                                         | 1.7103565E 01                   | 8.8901584E-03                              | -2.0510905E 00                  |
| 299     | 1.5976434E 17                                         | 1.7203480E 01                   | 1.1195148E-02                              | -1.9509702E 00                  |
| 300     | 1.6906331E 17                                         | 1.7228049E 01                   | 1.1848144E-02                              | -1.9263497E 00                  |
| 301     | 1.7883747E 17                                         | 1.7252458E 01                   | 1.2534592E-02                              | -1.9018898E 00                  |
| 305     | 2.2311164E 17                                         | 1.7348522E 01                   | 1.5644968E-02                              | -1.8056253E 00                  |
| 310     | 2.9186074E 17                                         | 1.7465176E 01                   | 2.0477370E-02                              | -1.6887258E 00                  |
| 2040    | 4.3701993E 23                                         | 2.3640501E 01                   | 3.1768025E 04                              | 4.5019903E 00                   |
| 2870    | 1.0146156E 24                                         | 2.4006301E 01                   | 7.3878915E 04                              | 4.8685206E 00                   |
| 5600    | 3.4274182E 24                                         | 2.4534967E 01                   | 2.5000739E 05                              | 5.3979529E 00                   |
| 6100    | 3.9030395E 24                                         | 2.4591403E 01                   | 2.8473986E 05                              | 5.4544483E 00                   |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval  $3.0\mu\text{m}$  to  $3.5\mu\text{m}$

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|---------------------------------------|
| 50      | 0.                                                                         |                                       | 0.                                                       |                                       |
| 100     | 4.9143145E 05                                                              | 5.6914630E 00                         | 2.9119421E-14                                            | -1.3535817E 01                        |
| 150     | 6.7774526E 11                                                              | 1.1831066E 01                         | 3.9889225E-08                                            | -7.3991445E 00                        |
| 200     | 8.4874657E 14                                                              | 1.4928778E 01                         | 5.0387270E-05                                            | -4.2976792E 00                        |
| 250     | 6.3340567E 16                                                              | 1.6801682E 01                         | 3.7845050E-03                                            | -2.4219909E 00                        |
| 300     | 1.1411728E 18                                                              | 1.8057351E 01                         | 6.8510548E-02                                            | -1.1642426E 00                        |
| 350     | 9.0796150E 18                                                              | 1.8958067E 01                         | 5.4709055E-01                                            | -2.6194078E-01                        |
| 400     | 4.3232979E 19                                                              | 1.9635815E 01                         | 2.6124353E 00                                            | 4.1704555E-01                         |
| 450     | 1.4598960E 20                                                              | 2.0164322E 01                         | 8.8418130E 00                                            | 9.4654132E-01                         |
| 500     | 3.8728520E 20                                                              | 2.0588031E 01                         | 2.3499330E 01                                            | 1.3710555E 00                         |
| 600     | 1.6797435E 21                                                              | 2.1225243E 01                         | 1.0221010E 02                                            | 2.0094938E 00                         |
| 700     | 4.8070013E 21                                                              | 2.1681874E 01                         | 2.9309574E 02                                            | 2.4670095E 00                         |
| 800     | 1.0605412E 22                                                              | 2.2025527E 01                         | 6.4762958E 02                                            | 2.8113267E 00                         |
| 900     | 1.9674965E 22                                                              | 2.2293914E 01                         | 1.2028922E 03                                            | 3.0802267E 00                         |
| 1000    | 3.2337957E 22                                                              | 2.2509713E 01                         | 1.9789387E 03                                            | 3.2964324E 00                         |
| 1500    | 1.4797934E 23                                                              | 2.3170201E 01                         | 9.0802320E 03                                            | 3.9580970E 00                         |
| 2000    | 3.3026473E 23                                                              | 2.3518862E 01                         | 2.0290862E 04                                            | 4.3073006E 00                         |
| 2500    | 5.5300519E 23                                                              | 2.3742729E 01                         | 3.3999335E 04                                            | 4.5314704E 00                         |
| 3000    | 8.0021720E 23                                                              | 2.3903208E 01                         | 4.9219776E 04                                            | 4.6921397E 00                         |
| 3500    | 1.0629167E 24                                                              | 2.4026499E 01                         | 6.5397458E 04                                            | 4.8155609E 00                         |
| 4000    | 1.3359047E 24                                                              | 2.4125775E 01                         | 8.2211200E 04                                            | 4.9149311E 00                         |
| 4500    | 1.6160272E 24                                                              | 2.4208449E 01                         | 9.9466064E 04                                            | 4.9976749E 00                         |
| 5000    | 1.9012796E 24                                                              | 2.4279046E 01                         | 1.1703815E 05                                            | 5.0683275E 00                         |
| 6000    | 2.4822833E 24                                                              | 2.4394851E 01                         | 1.5283158E 05                                            | 5.1842132E 00                         |
| 7000    | 3.0724603E 24                                                              | 2.4487486E 01                         | 1.8919236E 05                                            | 5.2769036E 00                         |
| 8000    | 3.6684618E 24                                                              | 2.4564484E 01                         | 2.2591339E 05                                            | 5.3539420E 00                         |
| 9000    | 4.2683855E 24                                                              | 2.4630263E 01                         | 2.6287701E 05                                            | 5.4197526E 00                         |
| 10000   | 4.8710737E 24                                                              | 2.4687625E 01                         | 3.0001163E 05                                            | 5.4771382E 00                         |
|         |                                                                            |                                       |                                                          |                                       |
| 290     | 6.9250618E 17                                                              | 1.7840424E 01                         | 4.1539294E-02                                            | -1.3815409E 00                        |
| 295     | 8.9269432E 17                                                              | 1.7950703E 01                         | 5.3570541E-02                                            | -1.2710740E 00                        |
| 299     | 1.0871851E 18                                                              | 1.8036304E 01                         | 6.5263948E-02                                            | -1.1853267E 00                        |
| 300     | 1.1411728E 18                                                              | 1.8057351E 01                         | 6.8510548E-02                                            | -1.1642426E 00                        |
| 301     | 1.1974606E 18                                                              | 1.8078261E 01                         | 7.1895752E-02                                            | -1.1432968E 00                        |
| 305     | 1.4472589E 18                                                              | 1.8160546E 01                         | 8.6922089E-02                                            | -1.0608699E 00                        |
| 310     | 1.8215982E 18                                                              | 1.8260453E 01                         | 1.0944847E-01                                            | -9.6079031E-01                        |
| 2040    | 3.4686761E 23                                                              | 2.3540164E 01                         | 2.1312411E 04                                            | 4.3286326E 00                         |
| 2870    | 7.3417484E 23                                                              | 2.3865799E 01                         | 4.5153244E 04                                            | 4.6546890E 00                         |
| 5600    | 2.2495170E 24                                                              | 2.4351896E 01                         | 1.3842980E 05                                            | 5.1412296E 00                         |
| 6100    | 2.5409599E 24                                                              | 2.4404998E 01                         | 1.5644657E 05                                            | 5.1943661E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 3.5 $\mu$ m to 4.0 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50      | 0.                                                                               |                                         | 0.                                                          |                                         |
| 100     | 6.5271032E 07                                                                    | 7.8147205E 00                           | 3.3347907E-12                                               | -1.1476931E 01                          |
| 150     | 1.5660936E 13                                                                    | 1.3194818E 01                           | 8.0817711E-07                                               | -6.0924935E 00                          |
| 200     | 8.1076709E 15                                                                    | 1.5908896E 01                           | 4.2132509E-04                                               | -3.3753827E 00                          |
| 250     | 3.5242464E 17                                                                    | 1.7547066E 01                           | 1.8402001E-02                                               | -1.7351350E 00                          |
| 300     | 4.4023838E 18                                                                    | 1.8643688E 01                           | 2.3065763E-01                                               | -6.3703217E-01                          |
| 350     | 2.6873926E 19                                                                    | 1.9429331E 01                           | 1.4115928E 00                                               | 1.4970943E-01                           |
| 400     | 1.0468943E 20                                                                    | 2.0019903E 01                           | 5.5096453E 00                                               | 7.4112365E-01                           |
| 450     | 3.0204859E 20                                                                    | 2.0480077E 01                           | 1.5920697E 01                                               | 1.2019621E 00                           |
| 500     | 7.0599192E 20                                                                    | 2.0848800E 01                           | 3.7258130E 01                                               | 1.5712211E 00                           |
| 600     | 2.5298880E 21                                                                    | 2.1403101E 01                           | 1.3376149E 02                                               | 2.1263311E 00                           |
| 700     | 6.3151649E 21                                                                    | 2.1800385E 01                           | 3.3434251E 02                                               | 2.5241916E 00                           |
| 800     | 1.2579750E 22                                                                    | 2.2099672E 01                           | 6.6666611E 02                                               | 2.8239084E 00                           |
| 900     | 2.1568176E 22                                                                    | 2.2333813E 01                           | 1.1438779E 03                                               | 3.0583797E 00                           |
| 1000    | 3.3305307E 22                                                                    | 2.2522513E 01                           | 1.7674190E 03                                               | 3.2473395E 00                           |
| 1500    | 1.2729207E 23                                                                    | 2.3104801E 01                           | 6.7665888E 03                                               | 3.8303698E 00                           |
| 2000    | 2.6143048E 23                                                                    | 2.3417356E 01                           | 1.3907966E 04                                               | 4.1432636E 00                           |
| 2500    | 4.1783444E 23                                                                    | 2.3621004E 01                           | 2.2238250E 04                                               | 4.3471006E 00                           |
| 3000    | 5.8712041E 23                                                                    | 2.3768727E 01                           | 3.1256661E 04                                               | 4.4949426E 00                           |
| 3500    | 7.6436064E 23                                                                    | 2.3883298E 01                           | 4.0700063E 04                                               | 4.6095951E 00                           |
| 4000    | 9.4680659E 23                                                                    | 2.3976261E 01                           | 5.0421637E 04                                               | 4.7026170E 00                           |
| 4500    | 1.1328273E 24                                                                    | 2.4054164E 01                           | 6.0334252E 04                                               | 4.7805640E 00                           |
| 5000    | 1.3214014E 24                                                                    | 2.4121035E 01                           | 7.0383324E 04                                               | 4.8474698E 00                           |
| 5500    | 1.7037450E 24                                                                    | 2.4231405E 01                           | 9.0759152E 04                                               | 4.9578905E 00                           |
| 7000    | 2.0906065E 24                                                                    | 2.4320272E 01                           | 1.1137645E 05                                               | 5.0467934E 00                           |
| 8000    | 2.4803251E 24                                                                    | 2.4394509E 01                           | 1.3214646E 05                                               | 5.1210555E 00                           |
| 9000    | 2.8719628E 24                                                                    | 2.4458179E 01                           | 1.5301906E 05                                               | 5.1847456E 00                           |
| 10000   | 3.2649509E 24                                                                    | 2.4513876E 01                           | 1.7396383E 05                                               | 5.2404590E 00                           |
| 290     | 2.8467319E 18                                                                    | 1.8454347E 01                           | 1.4906173E-01                                               | -8.2663383E-01                          |
| 295     | 3.5531015E 18                                                                    | 1.8550608E 01                           | 1.8610555E-01                                               | -7.3024067E-01                          |
| 299     | 4.2200606E 18                                                                    | 1.8625319E 01                           | 2.2179213E-01                                               | -6.5542671E-01                          |
| 300     | 4.4023838E 18                                                                    | 1.8643688E 01                           | 2.3065763E-01                                               | -6.3703217E-01                          |
| 301     | 4.5913046E 18                                                                    | 1.8661936E 01                           | 2.4056986E-01                                               | -6.1875878E-01                          |
| 305     | 5.4167979E 18                                                                    | 1.8733743E 01                           | 2.8388798E-01                                               | -5.4685299E-01                          |
| 310     | 6.6209006E 18                                                                    | 1.8820917E 01                           | 3.4709014E-01                                               | -4.5955772E-01                          |
| 2040    | 2.7328920E 23                                                                    | 2.3436622E 01                           | 1.4539481E 04                                               | 4.1625490E 00                           |
| 2870    | 5.4219218E 23                                                                    | 2.3734153E 01                           | 2.8863050E 04                                               | 4.4603423E 00                           |
| 5600    | 1.5501340E 24                                                                    | 2.4190369E 01                           | 8.2572821E 04                                               | 4.9168372E 00                           |
| 6100    | 1.7422635E 24                                                                    | 2.4241114E 01                           | 9.2811922E 04                                               | 4.9676038E 00                           |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 4.0 $\mu$ m to 4.5 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50      | 0.                                                                               |                                         | 0.                                                          |                                         |
| 100     | 2.7826636E 09                                                                    | 9.4444607E 00                           | 1.2658114E-10                                               | -9.8976310E 00                          |
| 150     | 1.7107514E 14                                                                    | 1.4233187E 01                           | 7.8509954E-06                                               | -5.1050753E 00                          |
| 200     | 4.4162087E 16                                                                    | 1.6645049E 01                           | 2.0376832E-03                                               | -2.6908633E 00                          |
| 250     | 1.2551722E 18                                                                    | 1.8098703E 01                           | 5.8119731E-02                                               | -1.2356764E 00                          |
| 300     | 1.1768571E 19                                                                    | 1.9070724E 01                           | 5.4627197E-01                                               | -2.6259108E-01                          |
| 350     | 5.8414547E 19                                                                    | 1.9766521E 01                           | 2.7163389E 00                                               | 4.3398395E-01                           |
| 400     | 1.9464501E 20                                                                    | 2.0289243E 01                           | 9.6635216E 00                                               | 9.5729698E-01                           |
| 450     | 4.9704455E 20                                                                    | 2.0696395E 01                           | 2.3169236E 01                                               | 1.3649117E 00                           |
| 500     | 1.0533739E 21                                                                    | 2.1022583E 01                           | 4.9143965E 01                                               | 1.6914702E 00                           |
| 600     | 3.2586866E 21                                                                    | 2.1513042E 01                           | 1.5222521E 02                                               | 2.1824866E 00                           |
| 700     | 7.3270956E 21                                                                    | 2.1864932E 01                           | 3.4258620E 02                                               | 2.5347699E 00                           |
| 800     | 1.3505509E 22                                                                    | 2.2130511E 01                           | 6.3188818E 02                                               | 2.8006403E 00                           |
| 900     | 2.1817110E 22                                                                    | 2.2338797E 01                           | 1.0212898E 03                                               | 3.0091490E 00                           |
| 1000    | 3.2147877E 22                                                                    | 2.2507152E 01                           | 1.5054918E 03                                               | 3.1776784E 00                           |
| 1500    | 1.0748180E 23                                                                    | 2.3031335E 01                           | 5.0391287E 03                                               | 3.7023555E 00                           |
| 2000    | 2.0764392E 23                                                                    | 2.3317319E 01                           | 9.7401186E 03                                               | 3.9885643E 00                           |
| 2500    | 3.2071127E 23                                                                    | 2.3506114E 01                           | 1.5048196E 04                                               | 4.1774845E 00                           |
| 3000    | 4.4101884E 23                                                                    | 2.3644457E 01                           | 2.0696953E 04                                               | 4.3159064E 00                           |
| 3500    | 5.6572277E 23                                                                    | 2.3752604E 01                           | 2.6552602E 04                                               | 4.4241071E 00                           |
| 4000    | 6.9327505E 23                                                                    | 2.3840905E 01                           | 3.2542305E 04                                               | 4.5124484E 00                           |
| 4500    | 9.2277060E 23                                                                    | 2.3915279E 01                           | 3.8623469E 04                                               | 4.5868513E 00                           |
| 5000    | 9.5364791E 23                                                                    | 2.3979388E 01                           | 4.4769671E 04                                               | 4.6509839E 00                           |
| 6000    | 1.2192035E 24                                                                    | 2.4085720E 01                           | 5.7193912E 04                                               | 4.7573498E 00                           |
| 7000    | 1.4851868E 24                                                                    | 2.4171781E 01                           | 6.9732428E 04                                               | 4.8434348E 00                           |
| 8000    | 1.7537015E 24                                                                    | 2.4243956E 01                           | 8.2343025E 04                                               | 4.9156269E 00                           |
| 9000    | 2.0232430E 24                                                                    | 2.4306049E 01                           | 9.5001959E 04                                               | 4.9777326E 00                           |
| 10000   | 2.2935962E 24                                                                    | 2.4360500E 01                           | 1.0769486E 05                                               | 5.0321950E 00                           |
|         |                                                                                  |                                         |                                                             |                                         |
| 270     | 7.9976493E 18                                                                    | 1.8902962E 01                           | 3.7107508E-01                                               | -4.3053821E-01                          |
| 295     | 9.7332010E 18                                                                    | 1.8988256E 01                           | 4.5169935E-01                                               | -3.4515053E-01                          |
| 299     | 1.1335727E 19                                                                    | 1.9054449E 01                           | 5.2615840E-01                                               | -2.7888349E-01                          |
| 300     | 1.1768571E 19                                                                    | 1.9070724E 01                           | 5.4627197E-01                                               | -2.6259108E-01                          |
| 301     | 1.2214920E 19                                                                    | 1.9086891E 01                           | 5.6701396E-01                                               | -2.4640625E-01                          |
| 305     | 1.4141799E 19                                                                    | 1.9150505E 01                           | 6.5656606E-01                                               | -1.8272157E-01                          |
| 310     | 1.6893816E 19                                                                    | 1.9227728E 01                           | 7.8449002E-01                                               | -1.0541258E-01                          |
| 2040    | 2.1631680E 23                                                                    | 2.3335090E 01                           | 1.0147239E 04                                               | 4.0063479E 00                           |
| 2870    | 4.0923144E 23                                                                    | 2.3611969E 01                           | 1.9204398E 04                                               | 4.2834007E 00                           |
| 5600    | 1.1120188E 24                                                                    | 2.4046112E 01                           | 5.2207155E 04                                               | 4.7177301E 00                           |
| 6100    | 1.2448118E 24                                                                    | 2.4095104E 01                           | 5.8443528E 04                                               | 4.7667364E 00                           |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 4.5 $\mu\text{m}$  to 5.0 $\mu\text{m}$

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|---------------------------------------|
| 50      | 0.                                                                         |                                       | 0.                                                       |                                       |
| 100     | 5.3994869E 10                                                              | 1.0732352E 01                         | 2.2127919E-09                                            | -8.6550595E 00                        |
| 150     | 1.1053801E 15                                                              | 1.5043512E 01                         | 4.5628445E-05                                            | -4.3407643E 00                        |
| 200     | 1.6277895E 17                                                              | 1.7211598E 01                         | 6.7472189E-03                                            | -2.1708752E 00                        |
| 250     | 3.2877203E 18                                                              | 1.8516895E 01                         | 1.3663554E-01                                            | -8.6443630E-01                        |
| 300     | 2.4492977E 19                                                              | 1.9389042E 01                         | 1.0197458E 00                                            | 8.4919176E-03                         |
| 350     | 1.0304355E 20                                                              | 2.0013021E 01                         | 4.2957298E 00                                            | 6.3303696E-01                         |
| 400     | 3.0314377E 20                                                              | 2.0481649E 01                         | 1.2650043E 01                                            | 1.1020920E 00                         |
| 450     | 7.0248961E 20                                                              | 2.0846640E 01                         | 2.9337043E 01                                            | 1.4674163E 00                         |
| 500     | 1.3775261E 21                                                              | 2.1139100E 01                         | 5.7562875E 01                                            | 1.7601425E 00                         |
| 600     | 3.7945633E 21                                                              | 2.1579162E 01                         | 1.5870889E 02                                            | 2.2006012E 00                         |
| 700     | 7.8603255E 21                                                              | 2.1895440E 01                         | 3.2897220E 02                                            | 2.5171592E 00                         |
| 800     | 1.3637495E 22                                                              | 2.2134735E 01                         | 5.7102948E 02                                            | 2.7566586E 00                         |
| 900     | 2.1036141E 22                                                              | 2.2322966E 01                         | 8.8114226E 02                                            | 2.9450460E 00                         |
| 1000    | 2.9895794E 22                                                              | 2.2475610E 01                         | 1.2525986E 03                                            | 3.0978119E 00                         |
| 1500    | 9.0208181E 22                                                              | 2.2955246E 01                         | 3.7826097E 03                                            | 3.5777915E 00                         |
| 2000    | 1.6632923E 23                                                              | 2.3220969E 01                         | 6.9770181E 03                                            | 3.8436699E 00                         |
| 2500    | 2.5028471E 23                                                              | 2.3398434E 01                         | 1.0500804E 04                                            | 4.0212226E 00                         |
| 3000    | 3.3853957E 23                                                              | 2.3529609E 01                         | 1.4205375E 04                                            | 4.1524528E 00                         |
| 3500    | 4.2937422E 23                                                              | 2.3632836E 01                         | 1.8018433E 04                                            | 4.2557170E 00                         |
| 4000    | 5.2186846E 23                                                              | 2.3717561E 01                         | 2.1901285E 04                                            | 4.3404697E 00                         |
| 4500    | 6.1548973E 23                                                              | 2.3789221E 01                         | 2.5831536E 04                                            | 4.4121503E 00                         |
| 5000    | 7.0990991E 23                                                              | 2.3851203E 01                         | 2.9795386E 04                                            | 4.4741490E 00                         |
| 6000    | 9.0036529E 23                                                              | 2.3954419E 01                         | 3.7791013E 04                                            | 4.5773886E 00                         |
| 7000    | 1.0922174E 24                                                              | 2.4038309E 01                         | 4.5845385E 04                                            | 4.6612957E 00                         |
| 8000    | 1.2849489E 24                                                              | 2.4108886E 01                         | 5.3936744E 04                                            | 4.7318847E 00                         |
| 9000    | 1.4782695E 24                                                              | 2.4169753E 01                         | 6.2052875E 04                                            | 4.7927620E 00                         |
| 10000   | 1.6720036E 24                                                              | 2.4223237E 01                         | 7.0186403E 04                                            | 4.8462530E 00                         |
|         |                                                                            |                                       |                                                          |                                       |
| 290     | 1.7320342E 19                                                              | 1.9238556E 01                         | 7.2089348E-01                                            | -1.4212890E-01                        |
| 295     | 2.0657045E 19                                                              | 1.9315068E 01                         | 8.5990760E-01                                            | -6.5548207E-02                        |
| 299     | 2.3683390E 19                                                              | 1.9374444E 01                         | 9.8600937E-01                                            | -6.1189529E-03                        |
| 300     | 2.4492977E 19                                                              | 1.9389042E 01                         | 1.0197458E 00                                            | 8.4919176E-03                         |
| 301     | 2.5324608E 19                                                              | 1.9403543E 01                         | 1.0544019E 00                                            | 2.3006169E-02                         |
| 305     | 2.8880250E 19                                                              | 1.9460601E 01                         | 1.2025854E 00                                            | 8.0115932E-02                         |
| 310     | 3.3873703E 19                                                              | 1.9529863E 01                         | 1.4107183E 00                                            | 1.4944030E-01                         |
| 2040    | 1.7282226E 23                                                              | 2.3237600E 01                         | 7.2495276E 03                                            | 3.8603097E 00                         |
| 2870    | 3.1529458E 23                                                              | 2.3498716E 01                         | 1.3229625E 04                                            | 4.1215475E 00                         |
| 5600    | 8.2397442E 23                                                              | 2.3915914E 01                         | 3.4583984E 04                                            | 4.5388750E 00                         |
| 6100    | 9.1949880E 23                                                              | 2.3963551E 01                         | 3.8594275E 04                                            | 4.5865229E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 5.0 $\mu\text{m}$  to 6.0 $\mu\text{m}$

| T                  | $Q_{0,\Delta\lambda}$                             |    | $\text{Log}_{10} Q_{0,\Delta\lambda}$ |    | $N_{0,\Delta\lambda}$           |                | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|--------------------|---------------------------------------------------|----|---------------------------------------|----|---------------------------------|----------------|---------------------------------------|
| $^{\circ}\text{K}$ | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |    |                                       |    | $\text{W m}^{-2}\text{sr}^{-1}$ |                |                                       |
| 50                 | 0.                                                |    |                                       |    | 0.                              |                |                                       |
| 100                | 4.7870959E 12                                     | 12 | 1.2680072E 01                         | 01 | 1.6530649E-07                   | -6.7817101E 00 |                                       |
| 150                | 2.1132914E 16                                     | 16 | 1.6324959E 01                         | 01 | 7.4050899E-04                   | -3.1304697E 00 |                                       |
| 200                | 1.4797563E 18                                     | 18 | 1.8170190E 01                         | 01 | 5.2347730E-02                   | -1.2811022E 00 |                                       |
| 250                | 1.9331949E 19                                     | 19 | 1.9286276E 01                         | 01 | 6.8826369E-01                   | -1.6224514E-01 |                                       |
| 300                | 1.0825908E 20                                     | 20 | 2.0034464E 01                         | 01 | 3.8716142E 00                   | 5.8789209E-01  |                                       |
| 350                | 3.7249390E 20                                     | 20 | 2.0571119E 01                         | 01 | 1.3365255E 01                   | 1.1259773E 00  |                                       |
| 400                | 9.4415444E 20                                     | 20 | 2.0975043E 01                         | 01 | 3.3961628E 01                   | 1.5309885E 00  |                                       |
| 450                | 1.9511625E 21                                     | 21 | 2.1290293E 01                         | 01 | 7.0321613E 01                   | 1.8470888E 00  |                                       |
| 500                | 3.4948935E 21                                     | 21 | 2.1543434E 01                         | 01 | 1.2515622E 02                   | 2.1009087E 00  |                                       |
| 600                | 8.4256269E 21                                     | 21 | 2.1925602E 01                         | 01 | 3.0485065E 02                   | 2.4840871E 00  |                                       |
| 700                | 1.5909540E 22                                     | 22 | 2.2201658E 01                         | 01 | 5.7656713E 02                   | 2.7608499E 00  |                                       |
| 800                | 2.5801944E 22                                     | 22 | 2.2411652E 01                         | 01 | 9.3618575E 02                   | 2.9713621E 00  |                                       |
| 900                | 3.7823192E 22                                     | 22 | 2.2577758E 01                         | 01 | 1.3735972E 03                   | 3.1378594E 00  |                                       |
| 1000               | 5.1666104E 22                                     | 22 | 2.2713206E 01                         | 01 | 1.8776376E 03                   | 3.2736118E 00  |                                       |
| 1500               | 1.3953122E 23                                     | 23 | 2.3144671E 01                         | 01 | 5.0808189E 03                   | 3.7059337E 00  |                                       |
| 2000               | 2.4473377E 23                                     | 23 | 2.3388694E 01                         | 01 | 8.9195621E 03                   | 3.9503435E 00  |                                       |
| 2500               | 3.5813300E 23                                     | 23 | 2.3554044E 01                         | 01 | 1.3059030E 04                   | 4.1159109E 00  |                                       |
| 3000               | 4.7593585E 23                                     | 23 | 2.3677548E 01                         | 01 | 1.7360119E 04                   | 4.2395527E 00  |                                       |
| 3500               | 5.9635132E 23                                     | 23 | 2.3775502E 01                         | 01 | 2.175716E 04                    | 4.3376014E 00  |                                       |
| 4000               | 7.1843623E 23                                     | 23 | 2.3856388E 01                         | 01 | 2.6215404E 04                   | 4.4185566E 00  |                                       |
| 4500               | 8.4164997E 23                                     | 23 | 2.3925131E 01                         | 01 | 3.0715138E 04                   | 4.4873525E 00  |                                       |
| 5000               | 9.6566156E 23                                     | 23 | 2.3984825E 01                         | 01 | 3.5244167E 04                   | 4.5470873E 00  |                                       |
| 6000               | 1.2152935E 24                                     | 24 | 2.4084681E 01                         | 01 | 4.4361297E 04                   | 4.6470043E 00  |                                       |
| 7000               | 1.4663138E 24                                     | 24 | 2.4166227E 01                         | 01 | 5.3529413E 04                   | 4.7285925E 00  |                                       |
| 8000               | 1.7182068E 24                                     | 24 | 2.4235075E 01                         | 01 | 6.2729574E 04                   | 4.7974724E 00  |                                       |
| 9000               | 1.9706836E 24                                     | 24 | 2.4294617E 01                         | 01 | 7.1951174E 04                   | 4.8570379E 00  |                                       |
| 10000              | 2.2235702E 24                                     | 24 | 2.4347051E 01                         | 01 | 8.1187819E 04                   | 4.9094909E 00  |                                       |
| 290                | 8.0392638E 19                                     | 19 | 1.9905216E 01                         | 01 | 2.8727851E 00                   | 4.5830314E-01  |                                       |
| 295                | 9.3523809E 19                                     | 19 | 1.9970922E 01                         | 01 | 3.3433523E 00                   | 5.2418214E-01  |                                       |
| 299                | 1.0517774E 20                                     | 20 | 2.0021924E 01                         | 01 | 3.7611308E 00                   | 5.7531844E-01  |                                       |
| 300                | 1.0825908E 20                                     | 20 | 2.0034464E 01                         | 01 | 3.8716142E 00                   | 5.8789209E-01  |                                       |
| 301                | 1.1140957E 20                                     | 20 | 2.0046922E 01                         | 01 | 3.9845859E 00                   | 6.0038320E-01  |                                       |
| 305                | 1.2472346E 20                                     | 20 | 2.0095948E 01                         | 01 | 4.4620928E 00                   | 6.4953861E-01  |                                       |
| 310                | 1.4304488E 20                                     | 20 | 2.0155472E 01                         | 01 | 5.1194184E 00                   | 7.0922062E-01  |                                       |
| 2040               | 2.5357471E 23                                     | 23 | 2.3404106E 01                         | 01 | 9.2422431E 03                   | 3.9657774E 00  |                                       |
| 2870               | 4.4500365E 23                                     | 23 | 2.3648363E 01                         | 01 | 1.6230697E 04                   | 4.2103372E 00  |                                       |
| 5600               | 1.1152330E 24                                     | 24 | 2.4047366E 01                         | 01 | 4.0706820E 04                   | 4.6096672E 00  |                                       |
| 6100               | 1.2473442E 24                                     | 24 | 2.4093542E 01                         | 01 | 4.5276223E 04                   | 4.6558702E 00  |                                       |

R.K.H. GeDe1 Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 6.0 $\mu$ m to 7.0 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                                   | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$              | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------------|---------------------------------------|------------------------------------|---------------------------------------|
| °K    | Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> |                                       | W m <sup>-2</sup> sr <sup>-1</sup> |                                       |
| 50    | 6.1428932E 04                                           | 4.7883730E 00                         | 1.8199638E-15                      | -1.4739937E 01                        |
| 100   | 1.0609332E 14                                           | 1.4025688E 01                         | 3.1492044E-06                      | -5.5017992E 00                        |
| 150   | 1.4264660E 17                                           | 1.7154261E 01                         | 4.2819092E-03                      | -2.3683625E 00                        |
| 200   | 5.4041224E 18                                           | 1.8732725E 01                         | 1.6327721E-01                      | -7.8707443E-01                        |
| 250   | 4.8410650E 19                                           | 1.9684941E 01                         | 1.4687081E 00                      | 1.6693549E-01                         |
| 300   | 2.0996794E 20                                           | 2.0322153E 01                         | 6.3881310E 00                      | 8.0537382E-01                         |
| 350   | 6.0087516E 20                                           | 2.0778784E 01                         | 1.8318484E 01                      | 1.2628895E 00                         |
| 400   | 1.3256765E 21                                           | 2.1122437E 01                         | 4.0476848E 01                      | 1.6072067E 00                         |
| 450   | 2.4593707E 21                                           | 2.1390824E 01                         | 7.5180764E 01                      | 1.8761067E 00                         |
| 500   | 4.0422447E 21                                           | 2.1606622E 01                         | 1.2368367E 02                      | 2.0923124E 00                         |
| 600   | 8.5782076E 21                                           | 2.1933396E 01                         | 2.6283638E 02                      | 2.4196855E 00                         |
| 700   | 1.4815636E 22                                           | 2.2170720E 01                         | 4.5438527E 02                      | 2.6574243E 00                         |
| 800   | 2.2510772E 22                                           | 2.2352390E 01                         | 6.9086890E 02                      | 2.8393957E 00                         |
| 900   | 3.1408150E 22                                           | 2.2497042E 01                         | 9.6443856E 02                      | 2.9842746E 00                         |
| 1000  | 4.1283091E 22                                           | 2.2615772E 01                         | 1.2681789E 03                      | 3.1031806E 00                         |
| 1500  | 1.0002715E 23                                           | 2.3000118E 01                         | 3.0762360E 03                      | 3.4880197E 00                         |
| 2000  | 1.6698809E 23                                           | 2.3222685E 01                         | 5.1382000E 03                      | 3.7108110E 00                         |
| 2500  | 2.3765996E 23                                           | 2.3375956E 01                         | 7.3148843E 03                      | 3.8642075E 00                         |
| 3000  | 3.1028542E 23                                           | 2.3491761E 01                         | 9.5519741E 03                      | 3.9800932E 00                         |
| 3500  | 3.8405754E 23                                           | 2.3584396E 01                         | 1.1824523E 04                      | 4.0727836E 00                         |
| 4000  | 4.5855772E 23                                           | 2.3661394E 01                         | 1.4119587E 04                      | 4.1498220E 00                         |
| 4500  | 5.3354819E 23                                           | 2.3727174E 01                         | 1.6429814E 04                      | 4.2156327E 00                         |
| 5000  | 6.0888422E 23                                           | 2.3784534E 01                         | 1.8750727E 04                      | 4.2730181E 00                         |
| 6000  | 7.6025141E 23                                           | 2.3880957E 01                         | 2.3414054E 04                      | 4.3694767E 00                         |
| 7000  | 9.1221734E 23                                           | 2.3960098E 01                         | 2.8095899E 04                      | 4.4486430E 00                         |
| 8000  | 1.0645590E 24                                           | 2.4027170E 01                         | 3.2789364E 04                      | 4.5157330E 00                         |
| 9000  | 1.2171517E 24                                           | 2.4085345E 01                         | 3.7490596E 04                      | 4.5739224E 00                         |
| 10000 | 1.3699205E 24                                           | 2.4136695E 01                         | 4.2197273E 04                      | 4.6252844E 00                         |
|       |                                                         |                                       |                                    |                                       |
| 290   | 1.6297991E 20                                           | 2.0212134E 01                         | 4.9561248E 00                      | 6.9514224E-01                         |
| 295   | 1.8538182E 20                                           | 2.0268067E 01                         | 5.6387571E 00                      | 7.5118339E-01                         |
| 299   | 2.0487038E 20                                           | 2.0311479E 01                         | 6.2327449E 00                      | 7.9467935E-01                         |
| 300   | 2.0996794E 20                                           | 2.0322153E 01                         | 6.3881310E 00                      | 8.0537382E-01                         |
| 301   | 2.1515753E 20                                           | 2.0332757E 01                         | 6.5463301E 00                      | 8.1599790E-01                         |
| 305   | 2.3685476E 20                                           | 2.0374482E 01                         | 7.2078243E 00                      | 8.5780419E-01                         |
| 310   | 2.6615782E 20                                           | 2.0425139E 01                         | 8.1013870E 00                      | 9.0855938E-01                         |
| 2040  | 1.7253845E 23                                           | 2.3236986E 01                         | 5.3091381E 03                      | 3.7250240E 00                         |
| 2870  | 2.9126922E 23                                           | 2.3464294E 01                         | 8.9662005E 03                      | 3.9526085E 00                         |
| 5600  | 6.9961491E 23                                           | 2.3844859E 01                         | 2.1545951E 04                      | 4.3333657E 00                         |
| 6100  | 7.7542588E 23                                           | 2.3889540E 01                         | 2.3881554E 04                      | 4.3780626E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 7.0 $\mu$ m to 8.0 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1}m^{-2}sr^{-1}$ | $Log_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$W m^{-2}sr^{-1}$ | $Log_{10} N_{0,\Delta\lambda}$ |
|---------|-------------------------------------------------------|--------------------------------|--------------------------------------------|--------------------------------|
| 50      | 8.1588790E 06                                         | 6.9116305E 00                  | 2.0842441E-13                              | -1.2681051E 01                 |
| 100     | 1.0134589E 15                                         | 1.5005806E 01                  | 2.6332818E-05                              | -4.5795027E 00                 |
| 150     | 5.5029798E 17                                         | 1.7740598E 01                  | 1.4416102E-02                              | -1.8411522E 00                 |
| 200     | 1.3086178E 19                                         | 1.9116813E 01                  | 3.4435283E-01                              | -4.6299635E-01                 |
| 250     | 8.8248991E 19                                         | 1.9945710E 01                  | 2.3286332E 00                              | 3.6710108E-01                  |
| 300     | 3.1623600E 20                                         | 2.0500011E 01                  | 8.3600931E 00                              | 9.2221111E-01                  |
| 350     | 7.8939561E 20                                         | 2.0897295E 01                  | 2.0896406E 01                              | 1.3200716E 00                  |
| 400     | 1.5724687E 21                                         | 2.1196582E 01                  | 4.1666632E 01                              | 1.6197884E 00                  |
| 450     | 2.6960220E 21                                         | 2.1430723E 01                  | 7.1492371E 01                              | 1.8542597E 00                  |
| 500     | 4.1631634E 21                                         | 2.1619423E 01                  | 1.1046368E 02                              | 2.0432195E 00                  |
| 600     | 8.0603058E 21                                         | 2.1906351E 01                  | 2.1405595E 02                              | 2.3305273E 00                  |
| 700     | 1.3064290E 22                                         | 2.2116086E 01                  | 3.4715446E 02                              | 2.5405228E 00                  |
| 800     | 1.8954845E 22                                         | 2.2277720E 01                  | 5.0390182E 02                              | 2.7023460E 00                  |
| 900     | 2.5542827E 22                                         | 2.2407269E 01                  | 6.79260 5E 02                              | 2.8320365E 00                  |
| 1000    | 3.2678810E 22                                         | 2.2514266E 01                  | 8.6924785E 02                              | 2.9391437E 00                  |
| 1500    | 7.3390052E 22                                         | 2.2865637E 01                  | 1.9535414E 03                              | 3.2908226E 00                  |
| 2000    | 1.1835082E 23                                         | 2.3073171E 01                  | 3.1513523E 03                              | 3.4984970E 00                  |
| 2500    | 1.6517517E 23                                         | 2.3217945E 01                  | 4.3989577E 03                              | 3.6433498E 00                  |
| 3000    | 2.1296813E 23                                         | 2.3328314E 01                  | 5.6724470E 03                              | 3.7537705E 00                  |
| 3500    | 2.6132581E 23                                         | 2.3417182E 01                  | 6.9610282E 03                              | 3.8426734E 00                  |
| 4000    | 3.1004064E 23                                         | 2.3491419E 01                  | 8.2591540E 03                              | 3.9169356E 00                  |
| 4500    | 3.5899535E 23                                         | 2.3555089E 01                  | 9.5636911E 03                              | 3.9806256E 00                  |
| 5000    | 4.0811887E 23                                         | 2.3610786E 01                  | 1.0872739E 04                              | 4.0363390E 00                  |
| 6000    | 5.0670493E 23                                         | 2.3704755E 01                  | 1.3499899E 04                              | 4.1303305E 00                  |
| 7000    | 6.0558267E 23                                         | 2.3782173E 01                  | 1.6134851E 04                              | 4.2077650E 00                  |
| 8000    | 7.0464324E 23                                         | 2.3847969E 01                  | 1.8774691E 04                              | 4.2735728E 00                  |
| 9000    | 8.0382593E 23                                         | 2.3905162E 01                  | 2.1417795E 04                              | 4.3307748E 00                  |
| 10000   | 9.0309422E 23                                         | 2.3955733E 01                  | 2.4063187E 04                              | 4.3813532E 00                  |
|         |                                                       |                                |                                            |                                |
| 290     | 2.5369620E 20                                         | 2.0404314E 01                  | 6.7046209E 00                              | 8.2637422E-01                  |
| 295     | 2.8376953E 20                                         | 2.0452966E 01                  | 7.5006169E 00                              | 8.7509698E-01                  |
| 299     | 3.0954716E 20                                         | 2.0490727E 01                  | 8.1830103E 00                              | 9.1291311E-01                  |
| 300     | 3.1623600E 20                                         | 2.0500011E 01                  | 8.3600931E 00                              | 9.2221111E-01                  |
| 301     | 3.2302394E 20                                         | 2.0509234E 01                  | 8.5398053E 00                              | 9.3144796E-01                  |
| 305     | 3.5117992E 20                                         | 2.0545530E 01                  | 9.2852975E 00                              | 9.6779583E-01                  |
| 310     | 3.8868242E 20                                         | 2.0589595E 01                  | 1.0278393E 01                              | 1.0119252E 00                  |
| 2040    | 1.2204522E 23                                         | 2.3086521E 01                  | 3.2497833E 03                              | 3.5118544E 00                  |
| 2870    | 2.0047606E 23                                         | 2.3302062E 01                  | 5.3395787E 03                              | 3.7275070E 00                  |
| 5600    | 4.6722682E 23                                         | 2.3669528E 01                  | 1.2447867E 04                              | 4.0950950E 00                  |
| 6100    | 5.1658193E 23                                         | 2.3713139E 01                  | 1.3763105E 04                              | 4.1387165E 00                  |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 8.0 $\mu$ m to 9.0 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 3.4783295E 08                                     | 8.5413709E 00                         | 7.9113210E-12                   | -1.1101751E 01                        |
| 100   | 5.5202609E 15                                     | 1.5741960E 01                         | 1.2735520E-04                   | -3.8949834E 00                        |
| 150   | 1.4710714E 18                                     | 1.8167634E 01                         | 3.4141998E-02                   | -1.4667111E 00                        |
| 200   | 2.4330626E 19                                     | 1.9386153E 01                         | 5.6647010E-01                   | -2.4682301E-01                        |
| 250   | 1.3167173E 20                                     | 2.0119492E 01                         | 3.0714978E 00                   | 4.8735021E-01                         |
| 300   | 4.0733582E 20                                     | 2.0609953E 01                         | 9.5140754E 00                   | 9.7836659E-01                         |
| 350   | 9.1588694E 20                                     | 2.0961842E 01                         | 2.1411637E 01                   | 1.3306499E 00                         |
| 400   | 1.6881886E 21                                     | 2.1227421E 01                         | 3.9493011E 01                   | 1.5965203E 00                         |
| 450   | 2.7271388E 21                                     | 2.1435707E 01                         | 6.3830609E 01                   | 1.8050290E 00                         |
| 500   | 4.0184846E 21                                     | 2.1604062E 01                         | 9.4093238E 01                   | 1.9735584E 00                         |
| 600   | 7.2656180E 21                                     | 2.1861272E 01                         | 1.7022455E 02                   | 2.2310222E 00                         |
| 700   | 1.1234846E 22                                     | 2.2050567E 01                         | 2.6332392E 02                   | 2.4204904E 00                         |
| 800   | 1.5755080E 22                                     | 2.2197420E 01                         | 3.6937625E 02                   | 2.5674690E 00                         |
| 900   | 2.0694495E 22                                     | 2.2315855E 01                         | 4.8528524E 02                   | 2.6859971E 00                         |
| 1000  | 2.5955490E 22                                     | 2.2414229E 01                         | 6.0875741E 02                   | 2.7844443E 00                         |
| 1500  | 5.5127355E 22                                     | 2.2741367E 01                         | 1.2935596E 03                   | 3.1117869E 00                         |
| 2000  | 8.6659381E 22                                     | 2.2937815E 01                         | 2.0338941E 03                   | 3.3083284E 00                         |
| 2500  | 1.1920599E 23                                     | 2.3076298E 01                         | 2.7981044E 03                   | 3.4468639E 00                         |
| 3000  | 1.5227544E 23                                     | 2.3182630E 01                         | 3.5746195E 03                   | 3.5532298E 00                         |
| 3500  | 1.8564835E 23                                     | 2.3268691E 01                         | 4.3582767E 03                   | 3.6393148E 00                         |
| 4000  | 2.1921268E 23                                     | 2.3340866E 01                         | 5.1464391E 03                   | 3.7115069E 00                         |
| 4500  | 2.5290537E 23                                     | 2.3402958E 01                         | 5.9376224E 03                   | 3.7736126E 00                         |
| 5000  | 2.8668827E 23                                     | 2.3457410E 01                         | 6.7309290E 03                   | 3.8280751E 00                         |
| 6000  | 3.5443510E 23                                     | 2.3549536E 01                         | 8.3218027E 03                   | 3.9202175E 00                         |
| 7000  | 4.2233752E 23                                     | 2.3625659E 01                         | 9.9163389E 03                   | 3.9963514E 00                         |
| 8000  | 4.9033743E 23                                     | 2.3690495E 01                         | 1.1513169E 04                   | 4.0611949E 00                         |
| 9000  | 5.5840241E 23                                     | 2.3746947E 01                         | 1.3111532E 04                   | 4.1176535E 00                         |
| 10000 | 6.2651300E 23                                     | 2.3796930E 01                         | 1.4710967E 04                   | 4.1676412E 00                         |
|       |                                                   |                                       |                                 |                                       |
| 250   | 3.3515987E 20                                     | 2.0525252E 01                         | 7.9265489E 00                   | 8.9357030E-01                         |
| 295   | 3.7009315E 20                                     | 2.0568311E 01                         | 8.6432695E 00                   | 9.3667805E-01                         |
| 299   | 3.9970012E 20                                     | 2.0601734E 01                         | 9.3355300E 00                   | 9.7013898E-01                         |
| 300   | 4.0733582E 20                                     | 2.0609953E 01                         | 9.5140754E 00                   | 9.7836659E-01                         |
| 301   | 4.1506590E 20                                     | 2.0618117E 01                         | 9.6948310E 00                   | 9.8654025E-01                         |
| 305   | 4.4693734E 20                                     | 2.0650247E 01                         | 1.0440134E 01                   | 1.0187061E 00                         |
| 310   | 4.8894361E 20                                     | 2.0689259E 01                         | 1.1422525E 01                   | 1.0577621E 00                         |
| 2040  | 8.9235181E 22                                     | 2.2950536E 01                         | 2.0943736E 03                   | 3.3210542E 00                         |
| 2870  | 1.4364192E 23                                     | 2.3157281E 01                         | 3.3718911E 03                   | 3.5278736E 00                         |
| 5600  | 3.2731305E 23                                     | 2.3514963E 01                         | 7.6849046E 03                   | 3.8856385E 00                         |
| 6100  | 3.6121959E 23                                     | 2.3557771E 01                         | 8.4811212E 03                   | 3.9284533E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 9.0 $\mu$ m to 10.0 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             |    | $\text{Log}_{10} Q_{0,\Delta\lambda}$ |               | $N_{0,\Delta\lambda}$           |  | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|----|---------------------------------------|---------------|---------------------------------|--|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |    |                                       |               | $\text{W m}^{-2}\text{sr}^{-1}$ |  |                                       |
| 50    | 6.7493587E 09                                     | 09 | 9.8292626E 00                         | 1.3829950E-10 | -9.8591795E 00                  |  |                                       |
| 100   | 2.0347369E 16                                     | 16 | 1.6308508E 01                         | 4.2170113E-04 | -3.3749952E 00                  |  |                                       |
| 150   | 3.0616221E 18                                     | 18 | 1.8485952E 01                         | 6.3734111E-02 | -1.1956281E 00                  |  |                                       |
| 200   | 3.7892972E 19                                     | 19 | 1.9578559E 01                         | 7.9062769E-01 | -1.0202798E-01                  |  |                                       |
| 250   | 1.7219077E 20                                     | 20 | 2.0236010E 01                         | 3.5976797E 00 | 5.5602250E-01                   |  |                                       |
| 300   | 4.7432041E 20                                     | 20 | 2.0676072E 01                         | 9.9193053E 00 | 9.9648125E-01                   |  |                                       |
| 350   | 9.8254068E 20                                     | 20 | 2.0992350E 01                         | 2.0560762E 01 | 1.3130392E 00                   |  |                                       |
| 400   | 1.7046869E 21                                     | 21 | 2.1231645E 01                         | 3.5689343E 01 | 1.5525386E 00                   |  |                                       |
| 450   | 2.6295176E 21                                     | 21 | 2.1419876E 01                         | 5.5071391E 01 | 1.7409261E 00                   |  |                                       |
| 500   | 3.7369743E 21                                     | 21 | 2.1572520E 01                         | 7.8287413E 01 | 1.8936920E 00                   |  |                                       |
| 600   | 6.4104981E 21                                     | 21 | 2.1806892E 01                         | 1.3435077E 02 | 2.1282402E 00                   |  |                                       |
| 700   | 9.5619621E 21                                     | 21 | 2.1980547E 01                         | 2.0045455E 02 | 2.3020160E 00                   |  |                                       |
| 800   | 1.3055256E 22                                     | 22 | 2.2116118E 01                         | 2.7395146E 02 | 2.4376736E 00                   |  |                                       |
| 900   | 1.6829737E 22                                     | 22 | 2.2226077E 01                         | 3.5293777E 02 | 2.5476982E 00                   |  |                                       |
| 1000  | 2.0791154E 22                                     | 22 | 2.2317879E 01                         | 4.3676363E 02 | 2.6395499E 00                   |  |                                       |
| 1500  | 4.2317446E 22                                     | 22 | 2.2626520E 01                         | 8.8783594E 02 | 2.9483328E 00                   |  |                                       |
| 2000  | 6.5233558E 22                                     | 22 | 2.2814471E 01                         | 1.3688303E 03 | 3.1363496E 00                   |  |                                       |
| 2500  | 8.8738738E 22                                     | 22 | 2.2948113E 01                         | 1.8622117E 03 | 3.2700291E 00                   |  |                                       |
| 3000  | 1.1254566E 23                                     | 23 | 2.3051329E 01                         | 2.3619383E 03 | 3.3732686E 00                   |  |                                       |
| 3500  | 1.3652718E 23                                     | 23 | 2.3135219E 01                         | 2.8653366E 03 | 3.4571757E 00                   |  |                                       |
| 4000  | 1.6061862E 23                                     | 23 | 2.3205796E 01                         | 3.3710455E 03 | 3.5277647E 00                   |  |                                       |
| 4500  | 1.8478369E 23                                     | 23 | 2.3266664E 01                         | 3.8783047E 03 | 3.5886420E 00                   |  |                                       |
| 5000  | 2.0900045E 23                                     | 23 | 2.3320147E 01                         | 4.3866502E 03 | 3.6421330E 00                   |  |                                       |
| 6000  | 2.5753767E 23                                     | 23 | 2.3410841E 01                         | 5.4055216E 03 | 3.7329376E 00                   |  |                                       |
| 7000  | 3.0616395E 23                                     | 23 | 2.3485954E 01                         | 6.4262663E 03 | 3.8079588E 00                   |  |                                       |
| 8000  | 3.5484601E 23                                     | 23 | 2.3550040E 01                         | 7.4481837E 03 | 3.8720504E 00                   |  |                                       |
| 9000  | 4.0356529E 23                                     | 23 | 2.3605914E 01                         | 8.4708838E 03 | 3.9279287E 00                   |  |                                       |
| 10000 | 4.5231065E 23                                     | 23 | 2.3655437E 01                         | 9.4941326E 03 | 3.9774553E 00                   |  |                                       |
|       |                                                   |    |                                       |               |                                 |  |                                       |
| 290   | 3.9813378E 20                                     | 20 | 2.0600029E 01                         | 8.3247352E 00 | 9.2037042E-01                   |  |                                       |
| 295   | 4.3519466E 20                                     | 20 | 2.0638683E 01                         | 9.1003811E 00 | 9.5905958E-01                   |  |                                       |
| 299   | 4.6632896E 20                                     | 20 | 2.0668692E 01                         | 9.7520348E 00 | 9.8909525E-01                   |  |                                       |
| 300   | 4.7432041E 20                                     | 20 | 2.0676072E 01                         | 9.9193053E 00 | 9.9648125E-01                   |  |                                       |
| 301   | 4.8239534E 20                                     | 20 | 2.0683403E 01                         | 1.0089326E 01 | 1.0038191E 00                   |  |                                       |
| 305   | 5.1553316E 20                                     | 20 | 2.0712256E 01                         | 1.0781975E 01 | 1.0326983E 00                   |  |                                       |
| 310   | 5.5885187E 20                                     | 20 | 2.0747297E 01                         | 1.1688792E 01 | 1.0677696E 00                   |  |                                       |
| 2040  | 6.7097811E 22                                     | 22 | 2.2826708E 01                         | 1.4079610E 03 | 3.1485907E 00                   |  |                                       |
| 2870  | 1.0633545E 23                                     | 23 | 2.3026678E 01                         | 2.2315801E 03 | 3.3486125E 00                   |  |                                       |
| 5600  | 2.3810943E 23                                     | 23 | 2.3376777E 01                         | 4.9976923E 03 | 2.6987695E 00                   |  |                                       |
| 6100  | 2.6239701E 23                                     | 23 | 2.3418959E 01                         | 5.5075269E 03 | 3.7409567E 00                   |  |                                       |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 10.0 $\mu$ m to 11.0 $\mu$ m

| T                  | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|--------------------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| $^{\circ}\text{K}$ | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50                 | 7.3789499E 10                                     | 1.0867995E 01                         | 1.3748475E-09                   | -8.8617455E 00                        |
| 100                | 5.6661599E 16                                     | 1.6753289E 01                         | 1.0652835E-03                   | -2.9725348E 00                        |
| 150                | 5.3399567E 18                                     | 1.8727538E 01                         | 1.0073169E-01                   | -9.9683388E-01                        |
| 200                | 5.2187318E 19                                     | 1.9717565E 01                         | 9.8612806E-01                   | -6.0066825E-03                        |
| 250                | 2.0582934E 20                                     | 2.0313507E 01                         | 3.8933091E 00                   | 5.9031889E-01                         |
| 300                | 5.1636872E 20                                     | 2.0712960E 01                         | 9.7737931E 00                   | 9.9006314E-01                         |
| 350                | 1.0016436E 21                                     | 2.1000713E 01                         | 1.8967952E 01                   | 1.2780204E 00                         |
| 400                | 1.6560068E 21                                     | 2.1219062E 01                         | 3.1370297E 01                   | 1.4965186E 00                         |
| 450                | 2.4625323E 21                                     | 2.1391382E 01                         | 4.6660729E 01                   | 1.6689515E 00                         |
| 500                | 3.4009712E 21                                     | 2.1531603E 01                         | 6.4455591E 01                   | 1.8092606E 00                         |
| 600                | 5.5972800E 21                                     | 2.1747977E 01                         | 1.0611138E 02                   | 2.0257620E 00                         |
| 700                | 8.1159964E 21                                     | 2.1909342E 01                         | 1.5389110E 02                   | 2.1872135E 00                         |
| 800                | 1.0865668E 22                                     | 2.2036056E 01                         | 2.0605850E 02                   | 2.3139905E 00                         |
| 900                | 1.3783675E 22                                     | 2.2139365E 01                         | 2.6142430E 02                   | 2.4173460E 00                         |
| 1000               | 1.6826981E 22                                     | 2.2226006E 01                         | 3.1917105E 02                   | 2.5040235E 00                         |
| 1500               | 3.3120556E 22                                     | 2.2520097E 01                         | 6.2837284E 02                   | 2.7982174E 00                         |
| 2000               | 5.0273257E 22                                     | 2.2701337E 01                         | 9.5390285E 02                   | 2.9795042E 00                         |
| 2500               | 6.7786341E 22                                     | 2.2831142E 01                         | 1.2862827E 03                   | 3.1093364E 00                         |
| 3000               | 8.5483221E 22                                     | 2.2931881E 01                         | 1.6221560E 03                   | 3.2100927E 00                         |
| 3500               | 1.0328621E 23                                     | 2.3014042E 01                         | 1.9600401E 03                   | 3.2922663E 00                         |
| 4000               | 1.2115590E 23                                     | 2.3083344E 01                         | 2.2992043E 03                   | 3.3615776E 00                         |
| 4500               | 1.3907025E 23                                     | 2.3143234E 01                         | 2.6392112E 03                   | 3.4214742E 00                         |
| 5000               | 1.5701593E 23                                     | 2.3195944E 01                         | 2.9798137E 03                   | 3.4741891E 00                         |
| 6000               | 1.9297009E 23                                     | 2.3285490E 01                         | 3.6622124E 03                   | 3.5637435E 00                         |
| 7000               | 2.2897818E 23                                     | 2.3359794E 01                         | 4.3456363E 03                   | 3.6380534E 00                         |
| 8000               | 2.6502003E 23                                     | 2.3423279E 01                         | 5.0297018E 03                   | 3.7015423E 00                         |
| 9000               | 3.0108441E 23                                     | 2.3478688E 01                         | 5.7141956E 03                   | 3.7569551E 00                         |
| 10000              | 3.3716456E 23                                     | 2.3527842E 01                         | 6.3989893E 03                   | 3.8061114E 00                         |
|                    |                                                   |                                       |                                 |                                       |
| 290                | 4.4042847E 20                                     | 2.0643875E 01                         | 8.3354436E 00                   | 9.2092872E-01                         |
| 295                | 4.7751714E 20                                     | 2.0678989E 01                         | 9.0379033E 00                   | 9.5606769E-01                         |
| 299                | 5.0845715E 20                                     | 2.0706254E 01                         | 9.6239365E 00                   | 9.8335274E-01                         |
| 300                | 5.1636872E 20                                     | 2.0712960E 01                         | 9.7737931E 00                   | 9.9006314E-01                         |
| 301                | 5.2435097E 20                                     | 2.0719622E 01                         | 9.9249902E 00                   | 9.9673009E-01                         |
| 305                | 5.5698706E 20                                     | 2.0745845E 01                         | 1.0543188E 01                   | 1.0229720E 00                         |
| 310                | 5.9937364E 20                                     | 2.0777698E 01                         | 1.1346118E 01                   | 1.0548473E 00                         |
| 2040               | 5.1664441E 22                                     | 2.2713192E 01                         | 9.8030579E 02                   | 2.9913616E 00                         |
| 2870               | 8.0869617E 22                                     | 2.2907795E 01                         | 1.5345930E 03                   | 3.1859932E 00                         |
| 5600               | 1.7858034E 23                                     | 2.3251834E 01                         | 3.3890993E 03                   | 3.5300843E 00                         |
| 6100               | 1.9656890E 23                                     | 2.3293515E 01                         | 3.7305170E 03                   | 3.5717690E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 11.0 $\mu$ m to 12.0 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                             | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$           | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
| °K    | Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ |                                       | $\text{W m}^{-2}\text{sr}^{-1}$ |                                       |
| 50    | 5.2459749E 11                                     | 1.1719826E 01                         | 8.9568077E-09                   | -8.0478468E 00                        |
| 100   | 1.2830794E 17                                     | 1.7108253E 01                         | 2.2064496E-03                   | -2.6563060E 00                        |
| 150   | 8.1924282E 18                                     | 1.8913413E 01                         | 1.4124420E-01                   | -8.5002939E-01                        |
| 200   | 6.5831988E 19                                     | 1.9818437E 01                         | 1.1364737E 00                   | 5.5559396E-02                         |
| 250   | 2.3103234E 20                                     | 2.0363673E 01                         | 3.9914545E 00                   | 6.0113118E-01                         |
| 300   | 5.3683463E 20                                     | 2.0729840E 01                         | 9.2793728E 00                   | 9.6751863E-01                         |
| 350   | 9.8704895E 20                                     | 2.0994338E 01                         | 1.7067493E 01                   | 1.2321698E 00                         |
| 400   | 1.5692362E 21                                     | 2.1195688E 01                         | 2.7141312E 01                   | 1.4336309E 00                         |
| 450   | 2.2653667E 21                                     | 2.1355138E 01                         | 3.9189094E 01                   | 1.5931652E 00                         |
| 500   | 3.0572918E 21                                     | 2.1485337E 01                         | 5.2896758E 01                   | 1.7234291E 00                         |
| 600   | 4.8665857E 21                                     | 2.1687224E 01                         | 8.4219172E 01                   | 1.9254110E 00                         |
| 700   | 6.8978231E 21                                     | 2.1838712E 01                         | 1.1938863E 02                   | 2.0769629E 00                         |
| 800   | 9.0847284E 21                                     | 2.1958312E 01                         | 1.5725669E 02                   | 2.1966091E 00                         |
| 900   | 1.1383506E 22                                     | 2.2056276E 01                         | 1.9706431E 02                   | 2.2946080E 00                         |
| 1000  | 1.3764739E 22                                     | 2.2138768E 01                         | 2.3830158E 02                   | 2.3771269E 00                         |
| 1500  | 2.6371424E 22                                     | 2.2421134E 01                         | 4.5663462E 02                   | 2.6595688E 00                         |
| 2000  | 3.9531272E 22                                     | 2.2596941E 01                         | 6.8455988E 02                   | 2.8354115E 00                         |
| 2500  | 5.2921352E 22                                     | 2.2723631E 01                         | 9.1647770E 02                   | 2.9621219E 00                         |
| 3000  | 6.6428465E 22                                     | 2.2822354E 01                         | 1.1504251E 03                   | 3.0608584E 00                         |
| 3500  | 8.0003024E 22                                     | 2.2903107E 01                         | 1.3855422E 03                   | 3.1416198E 00                         |
| 4000  | 9.3619950E 22                                     | 2.2971368E 01                         | 1.6213940E 03                   | 3.2098886E 00                         |
| 4500  | 1.0726521E 23                                     | 2.3030459E 01                         | 1.8577371E 03                   | 3.2689843E 00                         |
| 5000  | 1.2093035E 23                                     | 2.3082535E 01                         | 2.0944250E 03                   | 3.3210648E 00                         |
| 6000  | 1.4830044E 23                                     | 2.3171142E 01                         | 2.5684914E 03                   | 3.4096781E 00                         |
| 7000  | 1.7570473E 23                                     | 2.3244783E 01                         | 3.0431507E 03                   | 3.4833231E 00                         |
| 8000  | 2.0313041E 23                                     | 2.3307775E 01                         | 3.5181810E 03                   | 3.5463182E 00                         |
| 9000  | 2.3057036E 23                                     | 2.3362903E 01                         | 3.9934589E 03                   | 3.6013492E 00                         |
| 10000 | 2.5802032E 23                                     | 2.3411654E 01                         | 4.4689102E 03                   | 3.6502016E 00                         |
|       |                                                   |                                       |                                 |                                       |
| 290   | 4.6392246E 20                                     | 2.666445E 01                          | 8.0183684E 00                   | 9.0408601E-01                         |
| 295   | 4.9964660E 20                                     | 2.0678662E 01                         | 8.6361989E 00                   | 9.3632263E-01                         |
| 299   | 5.2928022E 20                                     | 2.0723686E 01                         | 9.1497159E 00                   | 9.6136014E-01                         |
| 300   | 5.3683463E 20                                     | 2.0729840E 01                         | 9.2793728E 00                   | 9.6751863E-01                         |
| 301   | 5.4444732E 20                                     | 2.0735956E 01                         | 9.4110389E 00                   | 9.7363756E-01                         |
| 305   | 5.7547962E 20                                     | 2.0760030E 01                         | 9.9477717E 00                   | 9.9772580E-01                         |
| 310   | 6.1557313E 20                                     | 2.0789279E 01                         | 1.0641250E 01                   | 1.0269926E 00                         |
| 2040  | 4.0596189E 22                                     | 2.2608485E 01                         | 7.0300425E 02                   | 2.8469580E 00                         |
| 2870  | 6.2908721E 22                                     | 2.2798711E 01                         | 1.0894619E 03                   | 3.0372120E 00                         |
| 5600  | 1.3734728E 23                                     | 2.3137820E 01                         | 2.3787759E 03                   | 3.3763536E 00                         |
| 6100  | 1.5103961E 23                                     | 2.3179091E 01                         | 2.6159354E 03                   | 3.4176270E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 12.0 $\mu\text{m}$  to 13.0 $\mu\text{m}$

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|---------------------------------------|
| 50      | 2.6876996E 12                                                              | 1.2428248E 01                         | 4.2219861E-08                                            | -7.3744832E 00                        |
| 100     | 2.4855499E 17                                                              | 1.7395423E 01                         | 3.9371788E-03                                            | -2.4048149E 00                        |
| 150     | 1.1425112E 19                                                              | 1.9057860E 01                         | 1.8134227E-01                                            | -7.4150096E-01                        |
| 200     | 7.7880536E 19                                                              | 1.9891429E 01                         | 1.2373908E 00                                            | 9.2506883E-02                         |
| 250     | 2.4789316E 20                                                              | 2.0394264E 01                         | 3.9409640E 00                                            | 5.9560246E-01                         |
| 300     | 5.4044761E 20                                                              | 2.0732754E 01                         | 8.5952913E 00                                            | 9.3426059E-01                         |
| 350     | 9.5061802E 20                                                              | 2.0978006E 01                         | 1.5122731E 01                                            | 1.1796302E 00                         |
| 400     | 1.4633198E 21                                                              | 2.1165339E 01                         | 2.3283517E 01                                            | 1.3670486E 00                         |
| 450     | 2.0616094E 21                                                              | 2.1314206E 01                         | 3.2808007E 01                                            | 1.5159799E 00                         |
| 500     | 2.7300958E 21                                                              | 2.1436178E 01                         | 4.3451140E 01                                            | 1.6380012E 00                         |
| 600     | 4.2285551E 21                                                              | 2.1626192E 01                         | 6.7311161E 01                                            | 1.8280871E 00                         |
| 700     | 5.8828858E 21                                                              | 2.1769590E 01                         | 9.3655736E 01                                            | 1.9715344E 00                         |
| 800     | 7.6447376E 21                                                              | 2.1883362E 01                         | 1.2171434E 02                                            | 2.0853418E 00                         |
| 900     | 9.4830120E 21                                                              | 2.1976946E 01                         | 1.5099130E 02                                            | 2.1789519E 00                         |
| 1000    | 1.1377163E 22                                                              | 2.2056035E 01                         | 1.8115943E 02                                            | 2.2580610E 00                         |
| 1500    | 2.1318628E 22                                                              | 2.2328759E 01                         | 3.3950309E 02                                            | 2.5308438E 00                         |
| 2000    | 3.1628738E 22                                                              | 2.2500082E 01                         | 5.0372562E 02                                            | 2.7021941E 00                         |
| 2500    | 4.2091483E 22                                                              | 2.2624194E 01                         | 6.7038035E 02                                            | 2.8263213E 00                         |
| 3000    | 5.2631885E 22                                                              | 2.2721246E 01                         | 8.3826832E 02                                            | 2.9233831E 00                         |
| 3500    | 6.3216027E 22                                                              | 2.2800827E 01                         | 1.0068661E 03                                            | 3.0029717E 00                         |
| 4000    | 7.3828506E 22                                                              | 2.2868224E 01                         | 1.1759093E 03                                            | 3.0703739E 00                         |
| 4500    | 8.4459660E 22                                                              | 2.2926649E 01                         | 1.3452504E 03                                            | 3.1288032E 00                         |
| 5000    | 9.5110012E 22                                                              | 2.2978198E 01                         | 1.5148003E 03                                            | 3.1803554E 00                         |
| 6000    | 1.1377163E 23                                                              | 2.3066022E 01                         | 1.8543185E 03                                            | 3.2681844E 00                         |
| 7000    | 1.3595591E 23                                                              | 2.3139110E 01                         | 2.1941957E 03                                            | 3.3412754E 00                         |
| 8000    | 1.5710725E 23                                                              | 2.3201690E 01                         | 2.5342976E 03                                            | 3.4038576E 00                         |
| 9000    | 1.8046799E 23                                                              | 2.3256400E 01                         | 2.8745492E 03                                            | 3.4585698E 00                         |
| 10000   | 2.0183531E 23                                                              | 2.3304997E 01                         | 3.2149059E 03                                            | 3.5071683E 00                         |
|         |                                                                            |                                       |                                                          |                                       |
| 290     | 4.7214905E 20                                                              | 2.0674079E 01                         | 7.5085715E 00                                            | 8.7555732E-01                         |
| 295     | 5.0570025E 20                                                              | 2.0703893E 01                         | 8.0424068E 00                                            | 9.0538603E-01                         |
| 299     | 5.3340303E 20                                                              | 2.0727055E 01                         | 8.4831996E 00                                            | 9.2855968E-01                         |
| 300     | 5.4044761E 20                                                              | 2.0732754E 01                         | 8.5952913E 00                                            | 9.3426059E-01                         |
| 301     | 5.4753954E 20                                                              | 2.0738415E 01                         | 8.7081369E 00                                            | 9.3992524E-01                         |
| 305     | 5.7637870E 20                                                              | 2.0760708E 01                         | 9.1670277E 00                                            | 9.6222855E-01                         |
| 310     | 6.1348023E 20                                                              | 2.0787801E 01                         | 9.7574053E 00                                            | 9.8933434E-01                         |
| 2040    | 3.2461632E 22                                                              | 2.2511370E 01                         | 5.1699166E 02                                            | 2.7134835E 00                         |
| 2870    | 4.9885869E 22                                                              | 2.2697977E 01                         | 7.9453433E 02                                            | 2.9001127E 00                         |
| 5600    | 1.0788938E 23                                                              | 2.3032978E 01                         | 1.7184574E 03                                            | 3.2351388E 00                         |
| 6100    | 1.1855155E 23                                                              | 2.3073907E 01                         | 1.8882930E 03                                            | 3.2760694E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 13.0 $\mu$ m to 14.0 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>W m <sup>-2</sup> sr <sup>-1</sup> | Log <sub>10</sub> $N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|-----------------------------------------|
| 50      | 1.0580966E 13                                                                    | 1.3024525E 01                           | 1.5460541E-07                                               | -6.8107753E 00                          |
| 100     | 4.2696032E 17                                                                    | 1.7630387E 01                           | 6.2676466E-03                                               | -2.2028955E 00                          |
| 150     | 1.4820881E 19                                                                    | 1.9170874E 01                           | 2.1791592E-01                                               | -6.6171104E-01                          |
| 200     | 8.7829031E 19                                                                    | 1.9943638E 01                           | 1.2924123E 00                                               | 1.1140101E-01                           |
| 250     | 2.5738741E 20                                                                    | 2.0410587E 01                           | 3.7892654E 00                                               | 5.7855503E-01                           |
| 300     | 5.3182834E 20                                                                    | 2.0725771E 01                           | 7.8319824E 00                                               | 9.9387170E-01                           |
| 350     | 9.0133643E 20                                                                    | 2.0954887E 01                           | 1.3276349E 01                                               | 1.1230787E 00                           |
| 400     | 1.3505266E 21                                                                    | 2.1130503E 01                           | 1.9895790E 01                                               | 1.2987612E 00                           |
| 450     | 1.8644094E 21                                                                    | 2.1270541E 01                           | 2.7469402E 01                                               | 1.4388492E 00                           |
| 500     | 2.4302906E 21                                                                    | 2.1385658E 01                           | 3.5810040E 01                                               | 1.5540048E 00                           |
| 600     | 3.6794938E 21                                                                    | 2.1565788E 01                           | 5.4223858E 01                                               | 1.7341904E 00                           |
| 700     | 5.0402685E 21                                                                    | 2.1702453E 01                           | 7.4283777E 01                                               | 1.8708940E 00                           |
| 800     | 6.4769864E 21                                                                    | 2.1811373E 01                           | 9.5464224E 01                                               | 1.9798407E 00                           |
| 900     | 7.9672092E 21                                                                    | 2.1901306E 01                           | 1.1743416E 02                                               | 2.0697945E 00                           |
| 1000    | 9.4963286E 21                                                                    | 2.1977555E 01                           | 1.3997807E 02                                               | 2.1460600E 00                           |
| 1500    | 1.7467049E 22                                                                    | 2.2242219E 01                           | 2.5749530E 02                                               | 2.4107693E 00                           |
| 2000    | 2.5690938E 22                                                                    | 2.2409780E 01                           | 3.7874955E 02                                               | 2.5783510E 00                           |
| 2500    | 3.4019065E 22                                                                    | 2.2531722E 01                           | 5.011009E 02                                                | 2.7003057E 00                           |
| 3000    | 4.2399939E 22                                                                    | 2.2627365E 01                           | 6.2511007E 02                                               | 2.7959565E 00                           |
| 3500    | 5.0811141E 22                                                                    | 2.2705959E 01                           | 7.4912762E 02                                               | 2.8745558E 00                           |
| 4000    | 5.9241367E 22                                                                    | 2.2772625E 01                           | 8.7342591E 02                                               | 2.9412261E 00                           |
| 4500    | 6.7684305E 22                                                                    | 2.2830488E 01                           | 9.9791181E 02                                               | 2.9990922E 00                           |
| 5000    | 7.6136155E 22                                                                    | 2.2881591E 01                           | 1.1225292E 03                                               | 3.0501977E 00                           |
| 6000    | 9.3057702E 22                                                                    | 2.2968752E 01                           | 1.3720275E 03                                               | 3.1373628E 00                           |
| 7000    | 1.0999456E 23                                                                    | 2.3041371E 01                           | 1.6217517E 03                                               | 3.2099844E 00                           |
| 8000    | 1.2694101E 23                                                                    | 2.3103602E 01                           | 1.8716174E 03                                               | 3.2722171E 00                           |
| 9000    | 1.4389384E 23                                                                    | 2.3158042E 01                           | 2.1215773E 03                                               | 3.3266589E 00                           |
| 10000   | 1.6085115E 23                                                                    | 2.3206424E 01                           | 2.3716033E 03                                               | 3.3750421E 00                           |
| 290     | 4.6888226E 20                                                                    | 2.0671064E 01                           | 6.9046474E 00                                               | 8.3914150E-01                           |
| 295     | 4.9937079E 20                                                                    | 2.0698858E 01                           | 7.3611715E 00                                               | 8.6694694E-01                           |
| 299     | 5.2536000E 20                                                                    | 2.0720457E 01                           | 7.7366875E 00                                               | 8.8855506E-01                           |
| 300     | 5.3182834E 20                                                                    | 2.0725771E 01                           | 7.8319824E 00                                               | 8.9387170E-01                           |
| 301     | 5.3833486E 20                                                                    | 2.0731052E 01                           | 7.9278402E 00                                               | 8.9915490E-01                           |
| 305     | 5.6474033E 20                                                                    | 2.0751849E 01                           | 8.3168656E 00                                               | 9.1995968E-01                           |
| 310     | 5.9859174E 20                                                                    | 2.0777131E 01                           | 8.8156000E 00                                               | 9.4525188E-01                           |
| 2040    | 2.6354348E 22                                                                    | 2.2420852E 01                           | 3.8852996E 02                                               | 2.5894245E 00                           |
| 2870    | 4.0217360E 22                                                                    | 2.2604414E 01                           | 5.9292946E 02                                               | 2.7730030E 00                           |
| 5600    | 8.6286787E 22                                                                    | 2.2935944E 01                           | 1.2721943E 03                                               | 3.1045535E 00                           |
| 6100    | 9.4750823E 22                                                                    | 2.2976583E 01                           | 1.3969916E 03                                               | 3.1451938E 00                           |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 14.0 $\mu\text{m}$  to 15.0 $\mu\text{m}$ .

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $\text{s}^{-1}\text{m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$\text{W m}^{-2}\text{sr}^{-1}$ | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|---------|----------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------|---------------------------------------|
| 50      | 3.4014457E 13                                                              | 1.3531664E 01                         | 4.6341473E-07                                            | -6.3340302E 00                        |
| 100     | 6.6750500E 17                                                              | 1.7824454E 01                         | 9.1287271E-03                                            | -2.0395898E 00                        |
| 150     | 1.9181199E 19                                                              | 1.9259622E 01                         | 2.4896747E-01                                            | -6.0385740E-01                        |
| 200     | 9.5521908E 19                                                              | 1.9980103E 01                         | 1.3088894E 00                                            | 1.1690295E-01                         |
| 250     | 2.6083136E 20                                                              | 2.0416360E 01                         | 3.5753906E 00                                            | 5.5332350E-01                         |
| 300     | 5.1488150E 20                                                              | 2.0711707E 01                         | 7.0595414E 00                                            | 8.4877650E-01                         |
| 350     | 8.4554393E 20                                                              | 2.0927136E 01                         | 1.1595193E 01                                            | 1.0642780E 00                         |
| 400     | 1.2383361E 21                                                              | 2.1092839E 01                         | 1.6983721E 01                                            | 1.2300329E 00                         |
| 450     | 1.6804186E 21                                                              | 2.1225417E 01                         | 2.3048957E 01                                            | 1.3626513E 00                         |
| 500     | 2.1614647E 21                                                              | 2.1334748E 01                         | 2.9649169E 01                                            | 1.4720125E 00                         |
| 600     | 3.2102422E 21                                                              | 2.1506538E 01                         | 4.4039894E 01                                            | 1.6438463E 00                         |
| 700     | 4.3403137E 21                                                              | 2.1637521E 01                         | 5.9546962E 01                                            | 1.7748596E 00                         |
| 800     | 5.5251225E 21                                                              | 2.1742342E 01                         | 7.5805734E 01                                            | 1.8797021E 00                         |
| 900     | 6.7482224E 21                                                              | 2.1829189E 01                         | 9.2590374E 01                                            | 1.9665658E 00                         |
| 1000    | 7.9990222E 21                                                              | 2.1903037E 01                         | 1.0975544E 02                                            | 2.0404261E 00                         |
| 1500    | 1.4483224E 22                                                              | 2.2160865E 01                         | 1.9874242E 02                                            | 2.2982906E 00                         |
| 2000    | 2.1145795E 22                                                              | 2.2325224E 01                         | 2.9017922E 02                                            | 2.4626663E 00                         |
| 2500    | 2.7881526E 22                                                              | 2.2445317E 01                         | 3.8262087E 02                                            | 2.5827687E 00                         |
| 3000    | 3.4654220E 22                                                              | 2.2539756E 01                         | 4.7557018E 02                                            | 2.6772147E 00                         |
| 3500    | 4.1448148E 22                                                              | 2.2617505E 01                         | 5.6881115E 02                                            | 2.7549681E 00                         |
| 4000    | 4.8255390E 22                                                              | 2.2683546E 01                         | 6.6223499E 02                                            | 2.8210121E 00                         |
| 4500    | 5.5071525E 22                                                              | 2.2740927E 01                         | 7.5578098E 02                                            | 2.8783960E 00                         |
| 5000    | 6.1893893E 22                                                              | 2.2791648E 01                         | 8.4941257E 02                                            | 2.9291187E 00                         |
| 6000    | 7.5551113E 22                                                              | 2.2878241E 01                         | 1.0368472E 03                                            | 3.0157148E 00                         |
| 7000    | 8.9219041E 22                                                              | 2.2950457E 01                         | 1.2244290E 03                                            | 3.0879336E 00                         |
| 8000    | 1.0289367E 23                                                              | 2.3012389E 01                         | 1.4121027E 03                                            | 3.1498663E 00                         |
| 9000    | 1.1657276E 23                                                              | 2.3066597E 01                         | 1.5998378E 03                                            | 3.2040760E 00                         |
| 10000   | 1.3025498E 23                                                              | 2.3114794E 01                         | 1.7876159E 03                                            | 3.2522742E 00                         |
|         |                                                                            |                                       |                                                          |                                       |
| 290     | 4.5747800E 20                                                              | 2.0660370E 01                         | 6.2722232E 00                                            | 7.9742150E-01                         |
| 295     | 4.8578868E 20                                                              | 2.0686447E 01                         | 6.6605149E 00                                            | 8.2350780E-01                         |
| 299     | 5.0900108E 20                                                              | 2.0706719E 01                         | 6.9788870E 00                                            | 8.4378617E-01                         |
| 300     | 5.1488150E 20                                                              | 2.0711707E 01                         | 7.0595414E 00                                            | 8.4877650E-01                         |
| 301     | 5.2079263E 20                                                              | 2.0716665E 01                         | 7.1406170E 00                                            | 8.5373574E-01                         |
| 305     | 5.4474165E 20                                                              | 2.0736191E 01                         | 7.4690995E 00                                            | 8.7326825E-01                         |
| 310     | 5.7535417E 20                                                              | 2.0759935E 01                         | 7.8889842E 00                                            | 8.9702109E-01                         |
| 2040    | 2.1682662E 22                                                              | 2.2336113E 01                         | 2.9754720E 02                                            | 2.4735559E 00                         |
| 2870    | 3.2890832E 22                                                              | 2.2517075E 01                         | 4.5136919E 02                                            | 2.6545319E 00                         |
| 5600    | 7.0086620E 22                                                              | 2.2845635E 01                         | 9.6185131E 02                                            | 2.9831080E 00                         |
| 6100    | 7.6917510E 22                                                              | 2.2880025E 01                         | 1.0556000E 03                                            | 3.0234994E 00                         |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$

Spectral interval 15.0 $\mu$ m to 20.0 $\mu$ m

| T     | $Q_{0,\Delta\lambda}$                                   |    | $\text{Log}_{10} Q_{0,\Delta\lambda}$ |    | $N_{0,\Delta\lambda}$              |                | $\text{Log}_{10} N_{0,\Delta\lambda}$ |
|-------|---------------------------------------------------------|----|---------------------------------------|----|------------------------------------|----------------|---------------------------------------|
| °K    | Quanta s <sup>-1</sup> m <sup>-2</sup> sr <sup>-1</sup> |    |                                       |    | W m <sup>-2</sup> sr <sup>-1</sup> |                |                                       |
| 50    | 3.3261217E 15                                           | 15 | 1.5521938E 01                         | 01 | 3.5498410E-05                      | -4.4497911E 00 |                                       |
| 100   | 8.7462170E 18                                           | 18 | 1.8941820E 01                         | 01 | 9.7211937E-02                      | -1.0122804E 00 |                                       |
| 150   | 1.3155533E 20                                           | 20 | 2.0119109E 01                         | 01 | 1.4881246E 00                      | 1.7263931E-01  |                                       |
| 200   | 5.2514611E 20                                           | 20 | 2.0720280E 01                         | 01 | 5.9941723E 00                      | 7.7772923E-01  |                                       |
| 250   | 1.2289964E 21                                           | 21 | 2.1089551E 01                         | 01 | 1.4102380E 01                      | 1.1492924E 00  |                                       |
| 300   | 2.2021713E 21                                           | 21 | 2.1342851E 01                         | 01 | 2.5354913E 01                      | 1.4040621E 00  |                                       |
| 350   | 3.3870932E 21                                           | 21 | 2.1529827E 01                         | 01 | 3.9088115E 01                      | 1.5920447E 00  |                                       |
| 400   | 4.7335616E 21                                           | 21 | 2.1675188E 01                         | 01 | 5.4718124E 01                      | 1.7381312E 00  |                                       |
| 450   | 6.2029638E 21                                           | 21 | 2.1792599E 01                         | 01 | 7.1793771E 01                      | 1.8560868E 00  |                                       |
| 500   | 7.7667171E 21                                           | 21 | 2.1890238E 01                         | 01 | 8.9980136E 01                      | 1.9541467E 00  |                                       |
| 600   | 1.1098701E 22                                           | 22 | 2.2045272E 01                         | 01 | 1.2876230E 02                      | 2.1097887E 00  |                                       |
| 700   | 1.4618218E 22                                           | 22 | 2.2164894E 01                         | 01 | 1.6975603E 02                      | 2.2298252E 00  |                                       |
| 800   | 1.8261691E 22                                           | 22 | 2.2261541E 01                         | 01 | 2.1221254E 02                      | 2.3267711E 00  |                                       |
| 900   | 2.1990836E 22                                           | 22 | 2.2342242E 01                         | 01 | 2.5568050E 02                      | 2.4076976E 00  |                                       |
| 1000  | 2.5781448E 22                                           | 22 | 2.2411307E 01                         | 01 | 2.9987435E 02                      | 2.4769394E 00  |                                       |
| 1500  | 4.5240429E 22                                           | 22 | 2.2655527E 01                         | 01 | 5.2682038E 02                      | 2.7216626E 00  |                                       |
| 2000  | 6.5088198E 22                                           | 22 | 2.2813502E 01                         | 01 | 7.5836074E 02                      | 2.8798759E 00  |                                       |
| 2500  | 8.5094422E 22                                           | 22 | 2.2929901E 01                         | 01 | 9.9177405E 02                      | 2.9964128E 00  |                                       |
| 3000  | 1.0518049E 23                                           | 23 | 2.3021935E 01                         | 01 | 1.2261312E 03                      | 3.0885369E 00  |                                       |
| 3500  | 1.2531237E 23                                           | 23 | 2.3097994E 01                         | 01 | 1.4610299E 03                      | 3.1646591E 00  |                                       |
| 4000  | 1.4547295E 23                                           | 23 | 2.3162782E 01                         | 01 | 1.6962678E 03                      | 3.2294945E 00  |                                       |
| 4500  | 1.6565268E 23                                           | 23 | 2.3219199E 01                         | 01 | 1.9317322E 03                      | 3.2859470E 00  |                                       |
| 5000  | 1.8584584E 23                                           | 23 | 2.3269153E 01                         | 01 | 2.1673553E 03                      | 3.3359301E 00  |                                       |
| 6000  | 2.2625903E 23                                           | 23 | 2.3354606E 01                         | 01 | 2.6389194E 03                      | 3.4214261E 00  |                                       |
| 7000  | 2.6669528E 23                                           | 23 | 2.3426015E 01                         | 01 | 3.1107559E 03                      | 3.4928659E 00  |                                       |
| 8000  | 3.0714594E 23                                           | 23 | 2.3487345E 01                         | 01 | 3.5827628E 03                      | 3.5542181E 00  |                                       |
| 9000  | 3.4760621E 23                                           | 23 | 2.3541088E 01                         | 01 | 4.0548835E 03                      | 3.6079784E 00  |                                       |
| 10000 | 3.8807322E 23                                           | 23 | 2.3588914E 01                         | 01 | 4.5270837E 03                      | 3.6558185E 00  |                                       |
|       |                                                         |    |                                       |    |                                    |                |                                       |
| 290   | 1.9887951E 21                                           | 21 | 2.1298590E 01                         | 01 | 2.2885073E 01                      | 1.3595523E 00  |                                       |
| 295   | 2.0944001E 21                                           | 21 | 2.1321059E 01                         | 01 | 2.4107305E 01                      | 1.3821487E 00  |                                       |
| 299   | 2.1804464E 21                                           | 21 | 2.1338545E 01                         | 01 | 2.5103393E 01                      | 1.3997324E 00  |                                       |
| 300   | 2.2021713E 21                                           | 21 | 2.1342851E 01                         | 01 | 2.5354913E 01                      | 1.4040621E 00  |                                       |
| 301   | 2.2239804E 21                                           | 21 | 2.1347131E 01                         | 01 | 2.5607422E 01                      | 1.4083659E 00  |                                       |
| 305   | 2.3120519E 21                                           | 21 | 2.1363997E 01                         | 01 | 2.6627240E 01                      | 1.4253262E 00  |                                       |
| 310   | 2.4239864E 21                                           | 21 | 2.1384530E 01                         | 01 | 2.7923639E 01                      | 1.4459720E 00  |                                       |
| 2040  | 6.6684389E 22                                           | 22 | 2.2824024E 01                         | 01 | 7.7698290E 02                      | 2.8904115E 00  |                                       |
| 2870  | 9.9952745E 22                                           | 22 | 2.2999794E 01                         | 01 | 1.1651349E 03                      | 3.0663762E 00  |                                       |
| 5600  | 2.1009030E 23                                           | 23 | 2.3322406E 01                         | 01 | 2.4502529E 03                      | 3.3892109E 00  |                                       |
| 6100  | 2.3030181E 23                                           | 23 | 2.3362297E 01                         | 01 | 2.6860929E 03                      | 3.4291210E 00  |                                       |

R.K.H. Gebel, Blackbody functions.

Blackbody Quantum Radiance  $Q_{0,\Delta\lambda}$  and Radiance  $N_{0,\Delta\lambda}$   
Spectral interval 20.0 $\mu$ m to 30.0 $\mu$ m

| T<br>°K | $Q_{0,\Delta\lambda}$<br>Quanta $s^{-1}m^{-2}sr^{-1}$ | $Log_{10} Q_{0,\Delta\lambda}$ | $N_{0,\Delta\lambda}$<br>$W m^{-2}sr^{-1}$ | $Log_{10} N_{0,\Delta\lambda}$ |
|---------|-------------------------------------------------------|--------------------------------|--------------------------------------------|--------------------------------|
| 50      | 1.9099873E 17                                         | 1.7281031E 01                  | 1.4128304E-03                              | -2.8499100E 00                 |
| 100     | 4.7406348E 19                                         | 1.9675836E 01                  | 3.7258089E-01                              | -4.2877942E-01                 |
| 150     | 3.3004510E 20                                         | 2.0518573E 01                  | 2.6587488E 00                              | 4.2467731E-01                  |
| 200     | 9.0967820E 20                                         | 2.0958888E 01                  | 7.4171649E 00                              | 8.7023792E-01                  |
| 250     | 1.7225143E 21                                         | 2.1236163E 01                  | 1.4141419E 01                              | 1.1504930E 00                  |
| 300     | 2.6977696E 21                                         | 2.1431005E 01                  | 2.2244092E 01                              | 1.3472147E 00                  |
| 350     | 3.7846609E 21                                         | 2.1578027E 01                  | 3.1297888E 01                              | 1.4955150E 00                  |
| 400     | 4.9496554E 21                                         | 2.1694575E 01                  | 4.1018718E 01                              | 1.6129821E 00                  |
| 450     | 6.1707031E 21                                         | 2.1790335E 01                  | 5.1219028E 01                              | 1.7094314E 00                  |
| 500     | 7.4330319E 21                                         | 2.1871166E 01                  | 6.1772848E 01                              | 1.7907976E 00                  |
| 600     | 1.0043954E 22                                         | 2.2001905E 01                  | 8.3519915E 01                              | 1.9223098E 00                  |
| 700     | 1.2731587E 22                                         | 2.2104883E 01                  | 1.0612504E 02                              | 2.0258179E 00                  |
| 800     | 1.5468638E 22                                         | 2.2189452E 01                  | 1.2905439E 02                              | 2.1107728E 00                  |
| 900     | 1.8239282E 22                                         | 2.2261007E 01                  | 1.5227223E 02                              | 2.1826207E 00                  |
| 1000    | 2.1033755E 22                                         | 2.2322917E 01                  | 1.7569476E 02                              | 2.2447588E 00                  |
| 1500    | 3.5199667E 22                                         | 2.2546539E 01                  | 2.9447060E 02                              | 2.4690420E 00                  |
| 2000    | 4.9512640E 22                                         | 2.2694716E 01                  | 4.1451054E 02                              | 2.6175356E 00                  |
| 2500    | 6.3885029E 22                                         | 2.2805399E 01                  | 5.3506130E 02                              | 2.7284035E 00                  |
| 3000    | 7.8287250E 22                                         | 2.2893691E 01                  | 6.5586856E 02                              | 2.8168168E 00                  |
| 3500    | 9.2706553E 22                                         | 2.2967110E 01                  | 7.7682270E 02                              | 2.8903219E 00                  |
| 4000    | 1.0713654E 23                                         | 2.3029937E 01                  | 8.9786878E 02                              | 2.9532129E 00                  |
| 4500    | 1.2157367E 23                                         | 2.3084840E 01                  | 1.0189762E 03                              | 3.0081640E 00                  |
| 5000    | 1.3601579E 23                                         | 2.3133589E 01                  | 1.1401265E 03                              | 3.0569531E 00                  |
| 6000    | 1.6491003E 23                                         | 2.3217247E 01                  | 1.3825132E 03                              | 3.1406693E 00                  |
| 7000    | 1.9381283E 23                                         | 2.3287383E 01                  | 1.6249736E 03                              | 3.2108463E 00                  |
| 8000    | 2.2272100E 23                                         | 2.3347761E 01                  | 1.8674900E 03                              | 3.2712560E 00                  |
| 9000    | 2.5163274E 23                                         | 2.3400767E 01                  | 2.1100172E 03                              | 3.3242860E 00                  |
| 10000   | 2.8054698E 23                                         | 2.3448006E 01                  | 2.3525758E 03                              | 3.3715436E 00                  |
|         |                                                       |                                |                                            |                                |
| 290     | 2.4924504E 21                                         | 2.1396627E 01                  | 2.0536167E 01                              | 1.3125194E 00                  |
| 295     | 2.5945382E 21                                         | 2.1414060E 01                  | 2.1385258E 01                              | 1.3301145E 00                  |
| 299     | 2.6770338E 21                                         | 2.1427654E 01                  | 2.2071562E 01                              | 1.3438331E 00                  |
| 300     | 2.6977696E 21                                         | 2.1431005E 01                  | 2.2244092E 01                              | 1.3472147E 00                  |
| 301     | 2.7185494E 21                                         | 2.1434337E 01                  | 2.2416996E 01                              | 1.3505774E 00                  |
| 305     | 2.8021030E 21                                         | 2.1447484E 01                  | 2.3112318E 01                              | 1.3638435E 00                  |
| 310     | 2.9074989E 21                                         | 2.1463520E 01                  | 2.3989600E 01                              | 1.3800230E 00                  |
| 2040    | 5.0660819E 22                                         | 2.2704672E 01                  | 4.2414074E 02                              | 2.6275100E 00                  |
| 2870    | 7.4540670E 22                                         | 2.2872393E 01                  | 6.2444145E 02                              | 2.7954918E 00                  |
| 5600    | 1.5335105E 23                                         | 2.3185686E 01                  | 1.2855475E 03                              | 3.1090882E 00                  |
| 6100    | 1.6779999E 23                                         | 2.3224792E 01                  | 1.4067565E 03                              | 3.1482190E 00                  |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <i>Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                             |                                                                           |
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| Radames K. H. Gebel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                             |                                                                           |
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| 11. SUPPLEMENTARY NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                             | 12. SPONSORING MILITARY ACTIVITY                                          |
| TECH OTHER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                             | Aerospace Research Laboratories (ARX)<br>Wright-Patterson AFB, Ohio 45433 |
| 13. ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                             |                                                                           |
| <p>Rapid calculation of the radiant power and the quantum flux emitted by a blackbody source involving any wavelength interval is made possible by the derivations in this paper which introduces the "normalized cumulative blackbody functions" formulated by the author. Thus, in contrast to conventional blackbody tables, all different radiation temperatures and any wavelength interval are covered by one function which can be compiled in one simple table of very modest volume. The final expressions using these cumulative blackbody functions are uncomplicated equations which can be solved by slide rule operations or, for higher accuracy, by using a desk calculator. Further, the paper introduces an unambiguous symbolism for expressing power and quantum flux radiated by a blackbody source and for expressing performance factors such as conversion yields of broadband radiation detectors. Also equations for calculating the difference in power and quantum flux for blackbody sources against a blackbody background are derived. Illustrative examples for typical situations are calculated.</p> |                                                                             |                                                                           |

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Security Classification

| 14<br>KEY WORDS                                                                                                                                                | LINK A |    | LINK B |    | LINK C |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|--------|----|--------|----|
|                                                                                                                                                                | ROLE   | WT | ROLE   | WT | ROLE   | WT |
| Blackbody functions<br>Infrared detection<br>Heat detection devices<br>Normalized Cumulative Blackbody functions<br>IR-atmospheric windows<br>Quantum Radiance |        |    |        |    |        |    |