

AN ULTRAVIOLET MULTIPLET TABLE

COPY 1

Section 1

The Spectra of Hydrogen, Helium, Lithium, Beryllium,
Boron, Carbon, Nitrogen, Oxygen, Fluorine, Neon, Sodium,
Magnesium, Aluminum, Silicon, Phosphorus, Sulfur,
Chlorine, Argon, Potassium, Calcium, Scandium, Titanium,
and Vanadium

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Section 2

The Spectra of Chromium, Manganese, Iron, Cobalt,
Nickel, Copper, Zinc, Gallium, Germanium, Arsenic,
Selenium, Bromine, Krypton, Rubidium, Strontium,
Yttrium, Zirconium, and Niobium

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UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

94 4 2 078

UNITED STATES DEPARTMENT OF COMMERCE, Charles Sawyer, Secretary
NATIONAL BUREAU OF STANDARDS, E. U. Condon, Director

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By CHARLOTTE E. MOORE



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Circular of the National Bureau of Standards 488, Section 1

Issued April 28, 1950

DTIC QUALITY INSPECTED 3

Foreword

In 1945, when the manuscript of the Revised Edition of "A Multiplet Table of Astrophysical Interest" (see footnote 1) was being prepared, a violet limit of wavelength near 3000 Å was imposed because the ozone in our atmosphere absorbs radiation of shorter wavelength. At that time, however, the suggestion was made that an extension of the Table to include multiplets in the far ultraviolet was needed. The astrophysical importance of ultraviolet transitions in the spectra of abundant elements in the interpretation of observed nebular and stellar lines was well known from the work of Bowen and others. A further impetus to such a program was provided with the advent of rockets, since it is now possible to observe the solar spectrum in the region of shorter wavelengths. Recently two films that record the solar spectrum to about 2300 Å were recovered from rocket flights, and attempts are being made to extend the observations farther to the violet.

The earlier astrophysical multiplet table has proved to be inadequate to meet present needs, chiefly because of its limited range of wavelength. In order to make more complete data available to those engaged in rocket research, to those working on spectrochemical analysis, and to scientific investigators in other fields, as well as to the astrophysicist, the present ultraviolet extension to it is being prepared.

This work is being done in conjunction with the program on "Atomic Energy Levels." The present Section includes selected spectra of the first 23 elements of the periodic table, H through V, covering the same elements as Volume I of *Atomic Energy Levels* (see footnote 6). Multiplets of 79 spectra are included, but, as before, no attempt has been made to list all known classified lines of each spectrum.

The arrangement of the present Table follows in detail that of the Revised Multiplet Table. Similarly, upon completion of the tabulation of the multiplets, a Finding List will be prepared containing all lines in order of wavelength.

The author of this Table has had the benefit of the expert advice of W. F. Meggers, Chief of the Spectroscopy Section of the Division of Atomic and Radiation Physics, under whose direction the program is being carried on. She has also received cordial collaboration from a number of institutions in making the selection of lines to be included, particularly from the Mt. Wilson and Yerkes Observatories.

WASHINGTON, D. C., April 1950.

E. U. CONDON, *Director*.

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Lithium	3	Li I.....	4			Si IV.....	36
		Li II.....	4	Phosphorus	15	P I.....	37
Beryllium	4	Be I.....	5			P II.....	38
		Be II.....	5			P III.....	38
Boron	5	B I.....	6			P IV.....	39
		B II.....	6	Sulfur	16	S I.....	40
Carbon	6	C I.....	7			S II.....	41
		C II.....	9			S III.....	42
		C III.....	10			S IV.....	43
		C IV.....	11			S V.....	43
Nitrogen	7	N I.....	12			S VI.....	44
		N II.....	13	Chlorine	17	Cl I.....	45
		N III.....	14			Cl II.....	46
		N IV.....	15			Cl III.....	46
		N V.....	16	Argon	18	A I.....	48
Oxygen	8	O I.....	17			A II.....	48
		O II.....	18			A III.....	50
		O III.....	19			A IV.....	50
		O IV.....	20			A V.....	51
		O V.....	20	Potassium	19	K I.....	52
		O VI.....	21			K II.....	52
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		F II.....	22	Calcium	20	Ca I.....	54
Neon	10	Ne I.....	23			Ca II.....	54
		Ne II.....	24			Ca III.....	55
		Ne III.....	25	Scandium	21	Sc I.....	56
		Ne IV.....	26			Sc II.....	56
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Sodium	11	Na I.....	27			Sc IV.....	57
		Na II.....	27	Titanium	22	Ti I.....	58
Magnesium	12	Mg I.....	28			Ti II.....	60
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1. Introduction

The ink was scarcely dry on the Revised Multiplet Table¹ published in 1945, when astrophysicists were compelled to extend their spectroscopic horizon to include the ultraviolet solar spectrum, heretofore masked by the ozone in the earth's atmosphere. The present ultraviolet limit of the solar spectrum films taken from a V-2 rocket is near 2300 Å,² and efforts are being made to extend the observations to regions of shorter waves.

During the work on the R M T, however, requests for ultraviolet multiplets were received. The important rôle of selected ultraviolet lines in producing the nebular lines has been fully discussed by Bowen,³ as, for example, the line of He II at 303.7 Å, those of O III at 303.7 Å and 374.4 Å, and the pair at 374.4 Å due to N III. Swings⁴

has commented that "certain forbidden transitions that are not directly observable may play a rôle in astronomy, as, for example, by fluorescence excitation, ionization or dissociation." The astrophysical importance of ultraviolet lines of abundant elements has more recently been stressed by Merrill⁵ and others, whose work illustrates that "peculiarities" in a number of stellar spectra can be attributed to selected ultraviolet transitions. The full significance of these "peculiarities" and the mechanisms that cause them have doubtless not yet been completely realized. For these reasons, and, also, in order to make more complete data available to those working on spectrochemical analysis, the present Ultraviolet Supplement to the R M T is being prepared.

2. Scope of the Ultraviolet Multiplet Table

It is not the purpose of the writer to record here all multiplets involving lines of wavelength shorter than about 3000 Å, the limit of the R M T. The limitation of the Table to lines of astrophysical interest presents a difficult problem of selection from the vast amount of existing data. From the experience gained in the identification of solar lines in the regions of longer wavelength, she has attempted to include all important lines to be expected in a high-dispersion ultraviolet solar spectrum, in addition to those needed to interpret the existing rocket solar films. She has had, also, the benefit of detailed suggestions from I. S. Bowen, P. W. Merrill, and others at the Mount Wilson Observatory. Bowen has generously furnished a list of the strong lines of spectra of elements abundant in the sun and similar stars. This list was made in connection with his study of fluorescence

phenomena in astronomical spectra. It has been a valuable guide in the selection of both the spectra and lines of the lighter elements (H through Ca) to be included in the Table. A preliminary draft of the Table was submitted to the Mount Wilson and Yerkes Observatories for criticism. As a result of comments received some additional lines have been included.

In compiling an Ultraviolet Multiplet Table it is difficult to satisfy the present and future needs of all users. In view of the probable shortcomings of the present Table for those who desire more extensive lists of lines, it is suggested that workers consult the volumes of Atomic Energy Levels.⁶ From this work one can obtain further literature references and also determine for a given spectrum both the positions and the probable percentage of lines omitted.

¹ Contributions from the Princeton University Observatory No. 20 (1945). (Here referred to as R M T.)

² J. J. Hopfield and H. E. Clearman, Jr., *Phys. Rev.* **72**, 877 (1948). E. Durand, J. J. Oberly, and R. Tousey, *Astroph. J.* **100**, 1 (1949).

³ I. S. Bowen, *Astroph. J.* **81**, 1 (1935); *Rev. Mod. Phys.* **8**, No. 2, 55 (1936).

⁴ P. Swings, *Letter* (May 1945).

⁵ P. W. Merrill, *Mt. Wilson Contr. No. 735*; *Astroph. J.* **100**, 274 (1947).

⁶ C. E. Moore, *Circ. Nat. Bur. Std.* **467**, Vol. I (1949); Vol. II in press.

3. Arrangement of the Table

The form of arrangement is identical with that of the R M T. Under each spectrum the first line contains the ionization potential; the grade of analysis; the grade denoting the relative number of classified lines included as compared with the total number classified in the ultraviolet; and the date of completion of the manuscript. The limit is also included for three spectra, H, He I, and He II.

The ionization potential is copied from the R M T except for Ar IV and Sc I, where improved values are entered. As in the R M T, the limit in cm^{-1} has been multiplied by the factor 0.00012345 to obtain the tabulated ionization potential, which is expressed in electron volts. Birge's revised conversion factor 0.00012395,⁷ has been used to calculate the ionization potentials recorded in "Atomic Energy Levels", which introduces a discordance in the two publications. For the reasons stated in some detail on page xvi of the R M T, and in spite of this inconsistency, it has appeared advisable to use the same factor in both multiplet tables.

The analyses of atomic spectra have recently been regraded by W. F. Meggers and the writer in connection with the program on the compilation of atomic energy levels. The revised grades are entered in the Ultraviolet Multiplet Table. As before, the grades range from A to E, grade A indicating that the analysis is essentially complete, and grade E that structure has been recognized, but is limited to a single multiplet or transition.

Similar grades are used in the entry "List A, List B, etc." to denote the relative numbers of classified lines listed here as compared with the total number classified in the ultraviolet, A denoting that all classified lines in the ultraviolet are listed, and D that only a few of the leading ones are tabulated.

The present table includes only a limited number of the spectra of the first 23 elements, H through V, 79 in all. Because the work is still in progress, it has been decided to include with each spectrum the references used, rather than to prepare one large bibliography at the end, as was done in the R M T. These references precede the multiplets of each spectrum. The letters on the left, A, B, C, etc. preceding the reference, indicate the source used for the wavelength quoted in the Table; they are repeated in column 2 under "Ref." For the more complex spectra the letters and corresponding references denoting the source are copied from the R M T, as for example in Ti I. Here, all the references listed previously were not needed and are not repeated. Consequently some letters do not appear, since only those references needed for ultraviolet multiplets are repeated.

The references are followed by letters indicating what was taken from each paper for the present compilation. Three types of letters are introduced for this purpose,

"W L", "I", and "T", denoting, respectively, wavelength, intensity, and terms, the last referring to the analysis of the spectrum. If the intensities from a reference are entered in parentheses in the table, parentheses are used around the "I" following the reference. Those papers used only for analysis or intensity follow the ones used for wavelength, and are not preceded by the letters denoting the source as described above. For example, in Cr II, Edlén's 1934 paper was first choice for wavelength, as denoted by "A" preceding the reference. Every wavelength taken from this paper has "A" entered in column 2 of the Table. Reference "A" was used for intensity and analysis as well as for wavelength, and consequently is followed by the letters "W L", "I", and "T". The last reference was used only for analysis, as denoted by "T" following the reference.

The columns in the Table are identical with those of the R M T, namely, 1, the laboratory wavelength; 2, the reference from which the wavelength was taken; 3, the estimated intensity of the line; 4 and 5, the low- and high-excitation potentials, respectively; 6, the respective *J*-values of the low and high levels involved in the production of the line; and, finally, 7, the multiplet designation of the line, complete except for the *J*-values in column 6.

Column 1, wavelength. With few exceptions these are observed laboratory wavelengths, in standard air for lines longer than 2000 Å, and in vacuum for those of shorter wavelength. For H and He II the positions of the lines calculated from the series have been adopted. J. E. Mack has kindly furnished these data, using term values that take into account the fine structure separation of the $2s\ ^2S_{1/2}$ and $2p\ ^2P_{3/2}$ levels as observed by W. E. Lamb, Jr., R. E. Retherford, and M. Skinner.⁸ For further details see, Atomic Energy Levels, Volume I.⁹ In O I Edlén's calculated positions are used for the lines from Reference B. As in the R M T, predicted positions are entered for lines that are masked. In such cases the wavelength is preceded by the letter "m". The letter "P" is entered in the Reference column to denote that the position is predicted, and the masking element is named in column 3.

Column 2, reference (discussed above).

Column 3, intensity. When two different intensity scales are used, or when the weaker members of a multiplet have intensities taken from a reference different from that used for the leading lines, the intensity is given in parentheses. All intensities are eye estimates except those of H and of He II. For these two spectra theoretical intensities calculated by J. C. Brennan under the direction of J. E. Mack and F. T. Adler are entered.¹⁰ These computations were made especially for inclusion here, through the kindness of J. E. Mack and his associates.

⁸ W. E. Lamb, Jr. and R. E. Retherford, *Bul. Am. Phys. Soc.* **24**, No. 1, 59 (1949) (H); M. Skinner and W. E. Lamb, Jr., *Bul. Am. Phys. Soc.* **24**, No. 1, 59 (1949) (He II).

⁹ C. E. Moore, *Circ. Nat. Bur. Std.* No. 467, Vol. I, 1 (1949).

¹⁰ Letter (April 1949).

⁷ R. T. Birge, *Rev. Mod. Phys.* **13**, No. 4, 237 (1941); *Reports on Progress in Physics* **8**, 131 (1941).

Columns 4 and 5, excitation potentials. As in the R M T, all excitation potentials have been calculated by multiplying the level values involved in the transition producing a given line, by the factor 0.00012345, where the levels start with the ground state zero. If the terms of different multiplicities in a given spectrum are not connected by observed intersystem combinations or by good series, parentheses are entered around all excitation potentials in the multiplets involving the terms in question, to indicate that there is an uncertainty in the recorded values.

Columns 6 and 7, *J*-values and multiplet designations. The last two columns give the complete multiplet designations of the lines, *J*-values being entered in column 6 for convenience, and the rest of the designation in column 7. The number in parentheses under the designation in

column 7 indicates the multiplet number, as in the R M T. These multiplet numbers will appear with each wavelength in the Finding List, which will form the final Section of the Ultraviolet Multiplet Table.

A detailed description of the types of spectroscopic notation used is given in the R M T and also in the Volume I of "Atomic Energy Levels," and will not be repeated here. Only one special type of notation deserves mention. For spectra of the inert gas type (Ne I, Na II, Mg III, A I, K II, Ca III, Sc IV in the present Section) the pair-coupling notation has been substituted for that used by Paschen and others. The Table on page xvii of the R M T and the column giving Paschen's notation in "Atomic Energy Levels" should suffice for cross reference to the earlier kinds of notation used for Ne I-like spectra.

4. Symbols

The symbols adopted here are identical with those used in the R M T (except for the designation of *raie ultime*) as follows:

* preceding the wavelength denotes that the line is a blend. If no symbol follows the wavelength the line is blended with another in the same spectrum. This symbol is also used in the intensity column when the intensity is blended.

§ follows a wavelength (an asterisk always preceding) to denote that a line in the spectrum of the neutral atom of a given element is blended with one in the first spark spectrum of that element.

§§ is a special symbol following the wavelength (an asterisk always preceding) used for blends not covered by the above symbols, and explained in footnotes.

‡ follows the wavelength of the *raie ultime*. This information has been taken from the papers by Meggers giving the strongest lines of spectra of neutral and singly ionized atoms.¹¹

† follows the multiplet designation to call attention to the fact that not all lines observed in the multiplet are listed here.

m precedes the wavelength when the line is masked, as described above.

5. Acknowledgments

In compiling these data the writer has profited greatly by useful suggestions from physicists and astrophysicists. At the Mount Wilson Observatory, I. S. Bowen and P. W. Merrill have consulted their colleagues and formulated very helpful comments regarding the scope and content of the Table. The manuscript has also been submitted to the director of the Yerkes Observatory, where O. Struve and his staff have kindly examined it in advance of publication. J. E. Mack and his collaborators have carried out extensive calculations of intensity data on H and He II. Their efforts to furnish the results especially for inclusion here are greatly appreciated. Special thanks are due W. F. Meggers and C. C. Kiess for their very helpful and authoritative suggestions and cordial collaboration.

The Director of the Bureau, E. U. Condon, has generously supported this large program.

Much of the material has been compiled by Mrs. Isabel D. Murray, whose competence and care are largely responsible for the accuracy in the details of this work. Similar care has been exercised by J. L. Mathusa and his staff in the Publications Section in the troublesome task of publishing these data. The writer records here her grateful thanks to all whose hearty cooperation has made this extensive project possible. As the work progresses she will welcome suggestions from the users of this Table.

¹¹ W. F. Meggers, J. Opt. Soc. Am. **31**, 44 (1941) (first spectra); **31**, 606 (1941) (singly ionized atoms).

HYDROGEN

H

I P 13.54 Anal A List B April 1949

Limit 109678.758

REFERENCES

- A Wavelengths calculated from term values derived by J. E. Mack from the series formula—See *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. I, p. 2 (1949). W L, T
- J. G. Brennan, unpublished material (April 1949). (Theoretical intensities calculated under the direction of J. E. Mack and F. T. Adler, for inclusion here. "The unit is micromicrowatts per excited atom")

H

H

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Vac							Vac						
1215.668†	A	2047	0.00	10.15	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-2p ² P°	919.351	A	20	0.00	13.43	$\frac{1}{2}-$	1s ² S-11p ² P°
1215.674	A	1023	0.00	10.15	$\frac{1}{2}-\frac{1}{2}$	(1)							(10)
1025.722	A	648	0.00	12.04	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-3p ² P°	918.129	A	16	0.00	13.45	$\frac{1}{2}-$	1s ² S-12p ² P°
1025.723	A	324	0.00	12.04	$\frac{1}{2}-\frac{1}{2}$	(2)							(11)
972.537	A	{ 278	0.00	12.69	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-4p ² P°	917.181	A	12	0.00	13.46	$\frac{1}{2}-$	1s ² S-13p ² P°
		{ 139	0.00	12.69	$\frac{1}{2}-\frac{1}{2}$	(3)							(12)
949.743	A	{ 144	0.00	13.00	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-5p ² P°	916.429	A	10	0.00	13.47	$\frac{1}{2}-$	1s ² S-14p ² P°
		{ 72	0.00	13.00	$\frac{1}{2}-\frac{1}{2}$	(4)							(13)
937.804	A	{ 84	0.00	13.16	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-6p ² P°	915.824	A	8	0.00	13.48	$\frac{1}{2}-$	1s ² S-15p ² P°
		{ 42	0.00	13.16	$\frac{1}{2}-\frac{1}{2}$	(5)							(14)
930.748	A	{ 53	0.00	13.26	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-7p ² P°	915.329	A	7	0.00	13.49	$\frac{1}{2}-$	1s ² S-16p ² P°
		{ 26	0.00	13.26	$\frac{1}{2}-\frac{1}{2}$	(6)							(15)
926.226	A	{ 35	0.00	13.33	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-8p ² P°	914.919	A	6	0.00	13.49	$\frac{1}{2}-$	1s ² S-17p ² P°
		{ 18	0.00	13.33	$\frac{1}{2}-\frac{1}{2}$	(7)							(16)
923.150	A	{ 25	0.00	13.37	$\frac{1}{2}-1\frac{1}{2}$	1s ² S-9p ² P°	914.576	A	5	0.00	13.50	$\frac{1}{2}-$	1s ² S-18p ² P°
		{ 12	0.00	13.37	$\frac{1}{2}-\frac{1}{2}$	(8)							(17)
920.963	A	27	0.00	13.40	$\frac{1}{2}-$	1s ² S-10p ² P°							
						(9)							

HELIUM

He I

I P 24.48 Anal A List C July 1947

Limit 198305 ± 15

REFERENCES

- A F. Paschen, Sitz. Berlin Akad. Wiss. **30**, 662 (1929). W L, T
 B J. C. Boyce and H. A. Robinson, J. Opt. Soc. Am. **26**, 133 (1936). W L
 C F. Paschen und R. Götze, *Seriengesetze der Linienspektren* p. 28 (Julius Springer, Berlin, 1922). W L,
 (I), T
 T. Lyman, Astroph. J. **60**, 1 (1924). I

He I

He I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 591. 420	A	3	0. 00	20. 87	0-1	$1s^2 \text{ } ^1\text{S} - 2p \text{ } ^3\text{P}^{\circ}$ (1)	Vac 508. 639	B	1	0. 00	24. 27	0-1	$1s^2 \text{ } ^1\text{S} - 8p \text{ } ^1\text{P}^{\circ}$ (8)
584. 331†	B	10	0. 00	21. 13	0-1	$1s^2 \text{ } ^1\text{S} - 2p \text{ } ^1\text{P}^{\circ}$ (2)	507. 712	B		0. 00	24. 31	0-1	$1s^2 \text{ } ^1\text{S} - 9p \text{ } ^1\text{P}^{\circ}$ (9)
537. 024	B	7	0. 00	22. 99	0-1	$1s^2 \text{ } ^1\text{S} - 3p \text{ } ^1\text{P}^{\circ}$ (3)	507. 053	B		0. 00	24. 35	0-1	$1s^2 \text{ } ^1\text{S} - 10p \text{ } ^1\text{P}^{\circ}$ (10)
522. 208	B	5	0. 00	23. 64	0-1	$1s^2 \text{ } ^1\text{S} - 4p \text{ } ^1\text{P}^{\circ}$ (4)							
515. 612	B	4	0. 00	23. 94	0-1	$1s^2 \text{ } ^1\text{S} - 5p \text{ } ^1\text{P}^{\circ}$ (5)	Air 2945. 104	C	(6)	19. 73	23. 92	1-	$2s \text{ } ^1\text{S} - 5p \text{ } ^3\text{P}^{\circ}$ (11)
512. 094	B	3	0. 00	24. 11	0-1	$1s^2 \text{ } ^1\text{S} - 6p \text{ } ^1\text{P}^{\circ}$ (6)	2829. 073	C	(4)	19. 73	24. 10	1-	$2s \text{ } ^1\text{S} - 6p \text{ } ^1\text{P}^{\circ}$ (12)
509. 993	B	2	0. 00	24. 21	0-1	$1s^2 \text{ } ^1\text{S} - 7p \text{ } ^1\text{P}^{\circ}$ (7)							

He II

I P 54.17 Anal A List B April 1949

Limit 438908.670

REFERENCES

- A Wavelengths calculated from term values derived by J. E. Mack from the series formula—See *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. I p. 7 (1949). W L, T
 J. G. Brennan, unpublished material (April 1949). (Theoretical intensities calculated under the direction of J. E. Mack and F. T. Adler, for inclusion here. "The unit is micromicrowatts per excited atom")

He II

He II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
303.781†	A	32753	0.00	40.64	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 2p^2P^o$	229.431	A	{ 168	0.00	53.81	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 12p^2P^o$
303.786	A	16376	0.00	40.64	$\frac{1}{2}-\frac{1}{2}$	(1)			84	0.00	53.81	$\frac{1}{2}-\frac{1}{2}$	(11)
256.317	A	10363	0.00	48.16	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 3p^2P^o$							
256.318	A	5182	0.00	48.16	$\frac{1}{2}-\frac{1}{2}$	(2)							
243.027	A	{4456	0.00	50.80	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 4p^2P^o$	1640.474	A	939	40.64	48.16	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 3d^2D$
		{2228	0.00	50.80	$\frac{1}{2}-\frac{1}{2}$	(3)	1640.332	A	522	40.64	48.16	$\frac{1}{2}-1\frac{1}{2}$	(12)
							1640.490	A	104	40.64	48.16	$1\frac{1}{2}-1\frac{1}{2}$	
237.331	A	{2300	0.00	52.02	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 5p^2P^o$	1215.171	A	404	40.64	50.80	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 4d^2D$
		{1150	0.00	52.02	$\frac{1}{2}-\frac{1}{2}$	(4)	1215.088	A	225	40.64	50.80	$\frac{1}{2}-1\frac{1}{2}$	(13)
							1215.175	A	45	40.64	50.80	$1\frac{1}{2}-1\frac{1}{2}$	
234.347	A	{1337	0.00	52.68	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 6p^2P^o$	1084.975	A	207	40.64	52.02	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 5d^2D$
		{668	0.00	52.68	$\frac{1}{2}-\frac{1}{2}$	(5)	1084.908	A	115	40.64	52.02	$\frac{1}{2}-1\frac{1}{2}$	(14)
232.584	A	{844	0.00	53.08	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 7p^2P^o$	1025.302	A	120	40.64	52.68	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 6d^2D$
		{422	0.00	53.08	$\frac{1}{2}-\frac{1}{2}$	(6)	1025.241	A	66	40.64	52.68	$\frac{1}{2}-1\frac{1}{2}$	(15)
231.454	A	{566	0.00	53.34	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 8p^2P^o$	992.391	A	75	40.64	53.08	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 7d^2D$
		{283	0.00	53.34	$\frac{1}{2}-\frac{1}{2}$	(7)	992.334	A	42	40.64	53.08	$\frac{1}{2}-1\frac{1}{2}$	(16)
230.686	A	{398	0.00	53.51	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 9p^2P^o$	972.138	A	50	40.64	53.34	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 8d^2D$
		{199	0.00	53.51	$\frac{1}{2}-\frac{1}{2}$	(8)	972.083	A	28	40.64	53.34	$\frac{1}{2}-1\frac{1}{2}$	(17)
230.139	A	{291	0.00	53.64	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 10p^2P^o$	958.724	A	35	40.64	53.51	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 9d^2D$
		{145	0.00	53.64	$\frac{1}{2}-\frac{1}{2}$	(9)	958.671	A	20	40.64	53.51	$\frac{1}{2}-1\frac{1}{2}$	(18)
229.736	A	{218	0.00	53.74	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 11p^2P^o$	949.354	A	26	40.64	53.64	$1\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 10d^2D$
		{109	0.00	53.74	$\frac{1}{2}-\frac{1}{2}$	(10)	949.301	A	14	40.64	53.64	$\frac{1}{2}-1\frac{1}{2}$	(19)

LITHIUM

Li I

I P 5.37 Anal A List D Aug. 1947

REFERENCES

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 A. Fowler, *Report on Series in Line Spectra* p. 97 (Fleetway Press, London, 1922). W L, I, T
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Li I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2741. 204	A	10R	0. 00	4. 50	$\frac{1}{2}-$	$2s^2S-4p^2P^o$ (1)
2562. 312	A	5R	0. 00	4. 82	$\frac{1}{2}-$	$2s^2S-5p^2P^o$ (2)
2475. 061	A	4R	0. 00	4. 99	$\frac{1}{2}-$	$2s^2S-6p^2P^o$ (3)
2425. 426	A	3R	0. 00	5. 09	$\frac{1}{2}-$	$2s^2S-7p^2P^o$ (4)
2394. 386	A	1R	0. 00	5. 15	$\frac{1}{2}-$	$2s^2S-8p^2P^o$ (5)

Li II

I P 75.31 Anal B List D Aug. 1947

REFERENCES

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 H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 267, 268 (Julius Springer, Berlin, 1939). I

Li II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 199. 282½	A	3	0. 00	61. 95	0-1	$1s^2S-2p^2P^o$ (1)
178. 015	A	1	0. 00	69. 35	0-1	$1s^2S-3p^2P^o$ (2)
171. 582	A	1	0. 00	71. 95	0-1	$1s^2S-4p^2P^o$ (3)
Air 2674. 4	B	2	68. 48	73. 10	1-	$3s^2S-5p^2P^o$ (4)

BERYLLIUM

Be I

I P 9.28 Anal A List C Aug. 1947

REFERENCES

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B F. Paschen und P. G. Kruger, Ann. der Phys. [5] 8, 1011 (1931). W L, I, T

Be I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2348. 612†	A	50	0. 00	5. 25	0-1	$2s^2\ ^1S - 2p\ ^1P^\circ$ (1)
2650. 636	B	10	2. 71	7. 37	2-2	$2p\ ^3P^\circ - 2p^2\ ^3P^\dagger$ (2)
2650. 613	B	8	2. 71	7. 37	1-1	
2650. 779	B	10	2. 71	7. 37	2-1	
2650. 470	B	10	2. 71	7. 37	1-2	
2494. 735	B	20	2. 71	7. 66	2-	$2p\ ^3P^\circ - 3d\ ^3D$ (3)
2494. 590	B	12	2. 71	7. 66	1-1, 2	
2494. 547	B	8	2. 71	7. 66	0-1	
2986. 09	B	10	6. 43	10. 56	1-2	$3s\ ^3S - 3s\ ^3P^\circ$ (4)

Be II

I P 18.13 Anal A List D Aug. 1947

REFERENCES

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Be II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1036. 271	A	8	0. 00	11. 91	$\frac{1}{2}-1\frac{1}{2}$	$2s\ ^2S - 3p\ ^2P^\circ$ (1)
842. 057	A	7	0. 00	14. 66	$\frac{1}{2}-$	$2s\ ^2S - 4p\ ^2P^\circ$ (2)
1776. 339	B	8	3. 94	10. 89	$1\frac{1}{2}-\frac{1}{2}$	$2p\ ^2P^\circ - 3s\ ^2S$ (3)
1776. 118	B	6	3. 94	10. 89	$\frac{1}{2}-\frac{1}{2}$	
1512. 451	B	10	3. 94	12. 10	$1\frac{1}{2}-$	$2p\ ^2P^\circ - 3d\ ^2D$ (4)
1512. 303	B	8	3. 94	12. 10	$\frac{1}{2}-1\frac{1}{2}$	
1197. 19	A	10	3. 94	14. 25	$1\frac{1}{2}-\frac{1}{2}$	$2p\ ^2P^\circ - 4s\ ^2S$ (5)
Air 2453. 89	A	3	10. 89	15. 92	$\frac{1}{2}-$	$3s\ ^2S - 5p\ ^2P^\circ$ (6)
2728. 83	A	4	12. 10	16. 63		$3d\ ^2D - 6f\ ^2F^\circ$ (7)

BORON

B I

I P 8.26 Anal B List D Aug. 1947

REFERENCES

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 B E. W. H. Selwyn, *Proc. Phys. Soc. (London)* **41**, 401 (1929). W L, (I), T
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 A. Fowler, *Report on Series in Line Spectra* p. 155 (Fleetway Press, London, 1922.) I

B I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2497. 724†	A	10R	0. 00	4. 94	1½ - ½	2p ¹P° - 3s ¹S
2496. 773	A	8R	0. 00	4. 94	½ - ½	(1)
2089. 57	B	(10n)	0. 00	5. 91	1½ - 2½	2p ¹P° - 2p² ¹D
2088. 84	B	(9n)	0. 00	5. 91	½ - 1½	(2)
Vac						
1826. 40	C	(20h)	0. 00	6. 76	1½ - 2½	2p ¹P° - 3d ¹D
1825. 89	C	(15h)	0. 00	6. 76	½ - 1½	(3)

B II

I P 25.02 Anal B List D Aug. 1947

REFERENCES

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 B. Edlén, *Zeit. Phys.* **98**, 561 (1936). T

B II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1362. 460†	A	5	0. 00	9. 06	0-1	2s² ¹S - 2p ¹P°
						(1)
693. 952	A	2	0. 00	17. 79	0-1	2s² ¹S - 3p ¹P°
						(2)
*1623. 99	A	5	4. 61	12. 21	{ 2-2 1-1 2-1 1-2	2p ¹P° - 2p² ³P†
1624. 37	A	4	4. 61	12. 21		
1623. 57	A	4	4. 61	12. 21		
						(3)
Air						
2395. 06	A	5	12. 64	17. 79	2-1	2p² ¹D - 3p ¹P°
						(4)

CARBON

C I

I P 11.20 Anal A List B Sept. 1947

REFERENCES

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 F N. E. Wagman, Univ. Pittsburgh Bul. **34**, No. 1, 9 (1937). W L

C I

C I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2967. 224	A	5	0. 01	4. 16	2-2	$2p^2 \ ^1P-2p^2 \ ^1S^{\circ}$	1194. 494	B	7	0. 01	10. 34	2-3	$2p^2 \ ^1P-4d \ ^1F^{\circ}$
2964. 846	A	2	0. 00	4. 16	1-2	(1)							(10)
Vac							1193. 284	B	10	0. 01	10. 35	2-3	$2p^2 \ ^1P-4d \ ^1D^{\circ}$
1656. 998†	A	10	0. 01	7. 46	2-2	$2p^2 \ ^1P-3s \ ^1P^{\circ}$	1193. 005	B	8	0. 00	10. 35	1-2	(11)
1657. 368	A	2	0. 00	7. 45	1-1	(2)	1192. 923	B	2	0. 00	10. 35	0-1	
1658. 113	A	5	0. 01	7. 45	2-1		1193. 460	B	3	0. 01	10. 35	2-2	
1657. 891	A	4	0. 00	7. 45	1-0								
1656. 255	A	5	0. 00	7. 46	1-2		1192. 480	B	2	0. 00	10. 36	1-1	$2p^2 \ ^1P-5s \ ^1P^{\circ}$
1656. 918	A	3	0. 00	7. 45	0-1								(12)
1561. 40	C	20d	0. 01	7. 91	2-3	$2p^2 \ ^1P-2p^2 \ ^1D^{\circ}$	1191. 855	B	1	0. 01	10. 36	2-3	$2p^2 \ ^1P-4d \ ^1F^{\circ}$
*1560. 702	C	15d	0. 00	7. 91	1-2	(3)							(13)
1560. 313	C	8d	0. 00	7. 91	0-1		1189. 660	B	6	0. 01	10. 38	2-2	$2p^2 \ ^1P-4d \ ^1P^{\circ}$
1561. 292	D	(2)	0. 01	7. 91	2-2		1189. 074	B	3	0. 00	10. 38	1-1	(14)
*1650. 702	C	15d	0. 00	7. 91	1-1		1189. 556	B	4	0. 01	10. 38	2-1	
1329. 58	D	(6)	0. 01	9. 29	2-	$2p^2 \ ^1P-2p^2 \ ^1P^{\circ}$	1188. 935	B	1	0. 00	10. 38	0-1	
1329. 099	C	5	0. 00	9. 29	1-	(4)							
1328. 820	C	3	0. 00	9. 29	0-1		1159. 004	B	5	0. 01	10. 66	2-3	$2p^2 \ ^1P-5d \ ^1F^{\circ}$
*1280. 340	D	6	0. 01	9. 65	2-2	$2p^2 \ ^1P-4s \ ^1P^{\circ}$	1158. 729	B	3	0. 00	10. 66	1-2	(15)
1280. 892	B	4	0. 01	9. 64	1-1	(5)	1158. 107	B	8	0. 01	10. 67	2-3	$2p^2 \ ^1P-5d \ ^1D^{\circ}$
1280. 646	B	2	0. 00	9. 64	2-1		1158. 017	B	7	0. 00	10. 66	1-2	(16)
1279. 898	B	5	0. 00	9. 64	1-0		1158. 398	B	2	0. 01	10. 66	2-2	
1280. 154	B	2	0. 00	9. 65	1-2		1157. 825	B	3	0. 01	10. 67	2-1	$2p^2 \ ^1P-6s \ ^1P^{\circ}?$
1279. 251	B	6	0. 01	9. 66	0-1		1157. 391	B	2	0. 00	10. 67	1-1	(17)
						$2p^2 \ ^1P-3d \ ^1F^{\circ}$	1157. 333	B	1	0. 01	10. 67	2-3	$2p^2 \ ^1P-5d \ ^1F^{\circ}$
						(6)							(18)
1277. 617	B	10	0. 01	9. 67	2-3	$2p^2 \ ^1P-3d \ ^1D^{\circ}$	1156. 619	B	5	0. 01	10. 68	2-2	$2p^2 \ ^1P-5d \ ^1P^{\circ}$
1277. 274	D	9	0. 00	9. 67	1-2	(7)	1156. 059	B	2	0. 00	10. 68	1-1	(19)
1277. 154	B	2	0. 00	9. 67	0-1		1156. 502	B	1	0. 01	10. 68	2-1?	
1277. 766	B	3	0. 01	9. 67	2-2		1155. 839	B	1	0. 00	10. 68	0-1	
1274. 131	B	5	0. 01	9. 69	2-3	$2p^2 \ ^1P-3d \ ^1F^{\circ}$	1141. 705	B	1	0. 01	10. 82	2-2	$2p^2 \ ^1P-6d \ ^1D^{\circ}$
						(8)							(20)
1261. 560	D	8	0. 01	9. 79	2-2	$2p^2 \ ^1P-3d \ ^1P^{\circ}$	1140. 688	B	3	0. 01	10. 83	2-3	$2p^2 \ ^1P-6d \ ^1F^{\circ}$
1260. 955	D	6	0. 00	9. 79	1-1	(9)	1140. 391	B	1	0. 00	10. 83	1-2	(21)
1261. 12	D	7	0. 00	9. 79	1-2								
1260. 745	B	4	0. 00	9. 79	0-1								

C I—Continued

C I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1139.894	B	7	0.01	10.84	2-3	$2p^2 \ ^1P-6d \ ^1D^\circ$	1315.903	B	4	1.26	10.64	2-2	$2p^2 \ ^1D-5d \ ^1D^\circ$
1139.794	B	6	0.00	10.83	1-2	(22)							(44)
1140.070	B	1	0.01	10.83	2-2		1313.471	B	6	1.26	10.66	2-3	$2p^2 \ ^1D-5d \ ^1F^\circ ?$
1139.142	B	2	0.01	10.84	2-2	$2p^2 \ ^1P-6d \ ^1P^\circ \uparrow$							(45)
1138.625	B	1	0.00	10.84	1-1	(23)	1312.261	B	2	1.26	10.67	2-3	$2p^2 \ ^1D-5d \ ^1D^\circ$
1139.037	B	1	0.01	10.84	2-1								(46)
1129.927	B	1	0.01	10.93	2-3	$2p^2 \ ^1P-7d \ ^1F^\circ$	1311.985	B	2	1.26	10.67	2-1	$2p^2 \ ^1D-6s \ ^1P^\circ$
1129.626	B	1	0.00	10.93	1-2	(24)							(47)
1129.161	B	6	0.01	10.94	2-3	$2p^2 \ ^1P-7d \ ^1D^\circ$	1311.374	B	8	1.26	10.67	2-3	$2p^2 \ ^1D-5d \ ^1F^\circ$
1128.748	B	1	0.01	10.94	2-2	$2p^2 \ ^1P-7d \ ^1P^\circ$							(48)
						(26)	1310.646	B	4	1.26	10.68	2-1	$2p^2 \ ^1D-5d \ ^1P^\circ$
1122.325	B	4	0.01	11.01	2-3	$2p^2 \ ^1P-8d \ ^1D^\circ$							(49)
						(27)	1291.380	B	1	1.26	10.82	2-2	$2p^2 \ ^1D-6d \ ^1D^\circ$
1122.179	B	1	0.01	11.01	2-2	$2p^2 \ ^1P-8d \ ^1P^\circ$							(50)
						(28)	1289.983	B	3	1.26	10.83	2-3	$2p^2 \ ^1D-6d \ ^1F^\circ$
1117.706	B	3	0.01	11.05	2-3	$2p^2 \ ^1P-9d \ ^1D^\circ$							(51)
						(29)	1288.633	B	2	1.26	10.84	2-1	$2p^2 \ ^1D-7s \ ^1P^\circ$
1114.414	B	2	0.01	11.08	2-3	$2p^2 \ ^1P-10d \ ^1D^\circ$							(52)
						(30)	1288.445	B	5	1.26	10.84	2-3	$2p^2 \ ^1D-6d \ ^1F^\circ$
945.566	D	(3)	0.01	13.06	2-1	$2p^2 \ ^1P-2p^2 \ ^1S^\circ$							(53)
945.336	D	(2)	0.00	13.06	1-1	(31)	1288.055	B	1	1.26	10.84	2-1	$2p^2 \ ^1D-6d \ ^1P^\circ$
945.193	D	(1)	0.00	13.06	0-1								(54)
1993.65	E	2	1.26	7.45	2-1	$2p^2 \ ^1D-3s \ ^1P^\circ$	1275.021	B	5	1.26	10.94	2-3	$2p^2 \ ^1D-7d \ ^1F^\circ$
						(32)							(55)
1930.930	B	10	1.26	7.65	2-1	$2p^2 \ ^1D-3s \ ^1P^\circ$	1274.880	B	2	1.26	10.94	2-1	$2p^2 \ ^1D-7d \ ^1P^\circ$
						(33)							(56)
1481.771	B	7	1.26	9.59	2-2	$2p^2 \ ^1D-3d \ ^1D^\circ$	1267.633	B	1	1.26	11.00	2-	$2p^2 \ ^1D-8d \ ^1F^\circ$
						(34)							(57)
1470.20	E	1	1.26	9.66	2-3	$2p^2 \ ^1D-3d \ ^1F^\circ$	1266.449	B	3	1.26	11.01	2-3	$2p^2 \ ^1D-8d \ ^1F^\circ$
						(35)							(58)
1467.450	B	3	1.26	9.67	2-1	$2p^2 \ ^1D-4s \ ^1P^\circ$	1260.670	B	2	1.26	11.05	2-3	$2p^2 \ ^1D-9d \ ^1F^\circ$
						(36)							(59)
1463.328	B	6	1.26	9.69	2-3	$2p^2 \ ^1D-3d \ ^1F^\circ$	Air						
						(37)	2582.901	A	5	2.67	7.45	0-1	$2p^2 \ ^1S-3s \ ^1P^\circ$
1459.054	B	2	1.26	9.72	2-1	$2p^2 \ ^1D-3d \ ^1P^\circ$							(60)
						(38)	2478.556	F	10	2.67	7.65	0-1	$2p^2 \ ^1S-3s \ ^1P^\circ$
1364.140	B	6	1.26	10.31	2-2	$2p^2 \ ^1D-4d \ ^1D^\circ$							(61)
						(39)	Vac						
1359.329	B	2	1.26	10.34	2-3	$2p^2 \ ^1D-4d \ ^1F^\circ$	1751.9	B	8	2.67	9.72	0-1	$2p^2 \ ^1S-3d \ ^1P^\circ$
						(40)							(62)
1357.058	B	3	1.26	10.36	2-1	$2p^2 \ ^1D-5s \ ^1P^\circ$	1602.984	B	5	2.67	10.37	0-1	$2p^2 \ ^1S-4d \ ^1P^\circ$
						(41)							(63)
1355.825	B	6	1.26	10.36	2-3	$2p^2 \ ^1D-4d \ ^1F^\circ$	1542.202	B	2	2.67	10.68	0-1	$2p^2 \ ^1S-5d \ ^1P^\circ$
						(42)							(64)
1354.286	D	(0)	1.26	10.37	2-1	$2p^2 \ ^1D-4d \ ^1P^\circ$							
						(43)	1431.595	A	20	4.16	12.79	2-3	$2p^2 \ ^1S^\circ-3s \ ^1P$
							1432.115	A	15	4.16	12.78	2-2	(65)
							1432.538	A	10	4.16	12.78	2-1	

C II

I P 24.28 Anal A List C Sept. 1947

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C II

C II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1335.684†	A	14	0.01	9.25	1½-2½	2p ³P°-2p² ³D	651.342	A	8	5.31	24.27	2½-3½	2p² ³P - 3d ¹D°
1334.515	A	13	0.00	9.25	½-1½	(1)	*651.262	A	7	5.31	24.27	1½-2½	(9)
1037.017	A	13	0.01	11.91	1½-½	2p ³P°-2p² ³S	*651.216	A	7	5.31	24.27	½-1½	
1036.330	A	12	0.00	11.91	½-½	(2)	*651.262	A	7	5.31	24.27	1½-1½	
							*651.216	A	7	5.31	24.26	½-½	
904.134	A	12	0.01	13.66	1½-1½	2p ³P°-2p² ³P							
903.950	A	11	0.00	13.66	½-½	(3)							
904.468	A	10	0.01	13.66	1½-½		1760.40	A	4	9.25	16.26	2½-1½	2p² ³D - 3p ³P°
903.609	A	10	0.00	13.66	½-1½		1760.81	A	3	9.25	16.26	1½-½	(10)
858.561	A	9	0.01	14.39	1½-½	2p ³P°-3s ³S	1323.916	A	8	9.25	18.57		2p² ³D - 2p² ³D°
858.094	A	8	0.00	14.39	½-½	(4)							(11)
687.355	A	11	0.01	17.97	1½-2½	2p ³P°-3d ³D	1065.883	A	7	9.25	20.83	2½-1½	2p² ³D - 2p² ³P°
687.059	A	10	0.00	17.97	½-1½	(5)	1066.121	A	6	9.25	20.83	1½-½	(12)
595.032	A	7d	0.01	20.75	1½-2½	2p ³P°-4d ³D							
594.808	A	6d	0.00	20.75	½-1½	(6)	Air						
							2836.710	B	8	11.91	16.26	½-1½	2p² ³S - 3p ³P°
							2837.602	B	7	11.91	16.26	½-½	(13)
1010.369	A	10	5.31	17.53	2½-1½	2p² ³P - 2p² ³S°							
1010.074	A	10	5.31	17.53	1½-1½	(7)							
1009.854	A	9	5.31	17.53	½-1½		2512.03	B	10	13.66	18.57	1½-2½	2p² ³P - 2p² ³D°
*806.555	A	7	5.31	20.62	2½-2½	2p² ³P - 3s ³P°	2509.11	B	9	13.66	18.58	½-1½	(14)
*806.684	A	4	5.31	20.61	1½-1½	(8)	2511.71	B	7	13.66	18.58	1½-1½	
			5.31	20.61	½-½								
*806.846	A	6	5.31	20.61	2½-1½								
806.384	A	5	5.31	20.62	1½-½		2747.31	B	6	16.26	20.75	1½-2½	3p ³P°-4d ³D
*806.555	A	7	5.31	20.61	½-1½		2746.50	B	5	16.26	20.75	½-1½	(15)

C III

I P 47.67 Anal A List C Sept. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV]
9, No. 6, 55 (1934). W L, I, T

C III

C III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet
			Low	High						Low	High		
Vac 977.026	A	18	0.00	12.64	0-1	$2s^2 \ ^1S - 2p \ ^1P^o$ (1)	Air 2296.89	A	20	12.64	18.01	1-2	$2p \ ^1P^o - 2p^2 \ ^1D$ (8)
386.203	A	14	0.00	31.97	0-1	$2s^2 \ ^1S - 3p \ ^1P^o$ (2)	Vac 1247.368	A	10	12.64	22.53	1-0	$2p \ ^1P^o - 2p^2 \ ^1S$ (9)
310.171	A	7	0.00	39.80	0-1	$2s^2 \ ^1S - 4p \ ^1P^o$ (3)	690.526	A	7	12.64	30.51	1-0	$2p \ ^1P^o - 3s \ ^1S$ (10)
1175.700	A	14	6.47	16.97	2-2	$2p \ ^1P^o - 2p^2 \ ^1P$ (4)	574.279	A	12	12.64	34.13	1-2	$2p \ ^1P^o - 3d \ ^1D$ (11)
1175.566	A	12	6.46	16.96	1-1		Air 2610.02 2614.49 2616.66	A A A	3 2 1	33.33 33.33 33.33	38.05 38.04 38.04	3, 2-2 2, 1-1 1-0	
1176.351	A	12	6.47	16.96	2-1								
1175.973	A	12	6.46	16.96	1-0								
1174.916	A	12	6.46	16.97	1-2								
1175.248	A	12	6.46	16.96	0-1	$2p \ ^1P^o - 3s \ ^1S$ (5)	2982.20	A	5	34.13	38.27	2-1	$3d \ ^1D - 3s \ ^1P^o$ (12)
538.312	A	13	6.47	29.39	2-1								
538.150	A	12	6.46	29.39	1-1								
538.075	A	11	6.46	29.39	0-1	$2p \ ^1P^o - 3d \ ^1D$ (6)							
459.633	A	15	6.47	33.33	2-2, 3								
459.521	A	14	6.46	33.33	1-1, 2								
459.462	A	13	6.46	33.33	0-1	$2p \ ^1P^o - 4d \ ^1D$ (7)	371.747	A	10	6.47	39.67	2-3	
*371.694	A	10	6.46	39.67	1-2	$2p \ ^1P^o - 4d \ ^1D$ (7)	371.784	A	8	6.47	39.66	0-1	
371.784	A	8	6.47	39.67	2-2								

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I P 14.49 Anal A List D Oct. 1947

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1199.550	A	6	0.00	10.29	1½-2½	2p³ ¹S°-3s ¹P	1163.870	A	9	2.37	12.98	-2½	2p³ ¹D°-3d ¹D†
1200.218	A	10	0.00	10.29	1½-1½	(1)	1164.314	A	9	2.37	12.98	-1½	(7)
1200.707	A	10	0.00	10.28	1½-½								
1134.979†	A	10	0.00	10.88	1½-2½	2p³ ¹S°-2p⁴ ¹P							
1134.417	A	10	0.00	10.88	1½-1½	(2)	1836.739	E	4	3.56	10.28	-½	2p³ ¹P°-3s ¹P
1134.168	A	10	0.00	10.88	1½-½								(8)
963.93	B	10	0.00	12.81	1½-2½	2p³ ¹S°-4s ¹P	1742.734	C	10	3.56	10.64	-1½	2p³ ¹P°-3s ¹P
964.57	B	10	0.00	12.80	1½-1½	(3)	1745.246	C	10	3.56	10.63	-½	(9)
965.07	B	10	0.00	12.79	1½-½		1411.937	C	10	3.56	12.30		2p³ ¹P°-3s' ¹D
													(10)
1492.630	C	10	2.37	10.64	-1½	2p³ ¹D°-3s ¹P	1326.629	D	10	3.56	12.87	-1½	2p³ ¹P°-4s ¹P
1494.669	C	10	2.37	10.63	1½-½	(4)	1327.960	D	10	3.56	12.86	-½	(11)
1243.170	C	8	2.37	12.30	-2½	2p³ ¹D°-3s' ¹D	1319.717	E	8	3.56	12.91	-1½	2p³ ¹P°-3d ¹P
1243.297	C	8	2.37	12.30	-1½	(5)	1319.039	E	8	3.56	12.92	-½	(12)
1167.442	A	8	2.37	12.95	2½-3½	2p³ ¹D°-3d ¹F†	1310.569	D	10	3.56	12.98	1½-2½	2p³ ¹P°-3d ¹D
1168.477	D	8	2.37	12.94	-2½	(6)	1310.967	D	10	3.56	12.98	-1½	(13)

N II

I P 29.49 Anal A List C Oct. 1947

REFERENCES

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 B A. Fowler and L. J. Freeman, Proc. Roy. Soc. London [A] 114, 662 (1927). W L, I, T
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N II

N II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1085.699†	A	12	0.02	11.39	2-3	$2p^2\ ^1P - 2p^2\ ^1D^\circ$	574.650	A	6	1.89	23.37	2-3	$2p^2\ ^1D - 3d\ ^1F^\circ$
*1084.568	A	11	0.01	11.39	1-2	(1)							(11)
1083.977	A	10	0.00	11.39	0-1								
1085.536	A	10	0.02	11.39	2-2								
*1084.568	A	11	0.01	11.39	1-1		745.836	A	6	4.04	20.59	0-1	$2p^2\ ^1S - 2p^2\ ^1P^\circ$
													(12)
*916.700	A	12	0.02	13.48	2-2	$2p^2\ ^1P - 2p^2\ ^1P^\circ$	635.180	A	5	4.04	23.47	0-1	$2p^2\ ^1S - 3d\ ^1P^\circ$
*916.004	A	11	0.01	13.48	1-1	(2)							(13)
*916.700	A	12	0.02	13.48	2-1								
915.955	A	10	0.01	13.48	1-0								
*916.004	A	11	0.01	13.48	1-2								
915.603	A	10	0.00	13.48	0-1		1886.82	C	4	18.42	24.96	1-1	$3s\ ^1P^\circ - 4p\ ^1P$
													(14)
*671.391	A	8	0.02	18.40	2-2	$2p^2\ ^1P - 3s\ ^1P^\circ$							
671.629	A	6	0.01	18.39	1-1	(3)	Air						
671.999	A	6	0.02	18.39	2-1		2206.10	C	3	20.32	25.92	1-2	$3p\ ^1P - 4d\ ^1D^\circ$
671.770	A	6	0.01	18.38	1-0								(15)
671.014	A	6	0.01	18.40	1-2								
*671.391	A	8	0.00	18.39	0-1								
							2317.01	C	5	20.58	25.90	3-4	$3p\ ^1D - 4d\ ^1F^\circ$
645.167	A	10	0.02	19.15	2-1	$2p^2\ ^1P - 2p^2\ ^1S^\circ$	2316.46	C	4	20.56	25.89	2-3	(16)
644.825	A	9	0.01	19.15	1-1	(4)	2316.65	C	3	20.56	25.88	1-2	
644.621	A	8	0.00	19.15	0-1								
533.726	A	6	0.02	23.15	2-3	$2p^2\ ^1P - 3d\ ^1D^\circ$							
533.577	A	5	0.01	23.14	1-2	(5)	2823.67	B	4	20.59	24.96	1-1	$2p^2\ ^1P^\circ - 4p\ ^1P$
533.504	A	4	0.00	23.14	0-1								(17)
533.809	A	4	0.02	23.14	2-2								
533.644	A	4	0.01	23.14	1-1		2590.91	B	4	20.59	25.35	1-2	$2p^2\ ^1P^\circ - 4p\ ^1D$
													(18)
529.860	A	5	0.02	23.31	2-2	$2p^2\ ^1P - 3d\ ^1P^\circ$							
529.481	A	3	0.01	23.32	1-1	(6)							
529.713	A	3	0.02	23.32	2-1		2522.27	B	4	21.07	25.96	2-3	$3p\ ^1P - 4d\ ^1D^\circ$
529.405	A	3	0.01	23.32	1-0		2520.85	B	3	21.06	25.96	1-2	(19)
529.627	A	3	0.01	23.31	1-2		2520.27	B	2	21.06	25.95	0-1	
529.343	A	3	0.00	23.32	0-1								
							2496.88	B	4	21.07	26.01	2-2	$3p\ ^1P - 4d\ ^1P^\circ$
							2490.37	B	2	21.06	26.02	1-1	(20)
775.957	A	12	1.89	17.80	2-2	$2p^2\ ^1D - 2p^2\ ^1D^\circ$							
						(7)							
746.976	A	8	1.89	18.42	2-1	$2p^2\ ^1D - 3s\ ^1P^\circ$	2799.20	B	4	21.51	25.92	2-2	$3p\ ^1D - 4d\ ^1D^\circ$
						(8)							(21)
660.280	A	9	1.89	20.59	2-1	$2p^2\ ^1D - 2p^2\ ^1P^\circ$	2709.82	B	6	21.51	26.06	2-3	$3p\ ^1D - 4d\ ^1F^\circ$
						(9)							(22)
582.150	A	5	1.89	23.10	2-2	$2p^2\ ^1D - 3d\ ^1D^\circ$	2461.30	B	3	21.51	26.52	2-1	$3p\ ^1D - 5s\ ^1P^\circ$
						(10)							(23)

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I P 47.24 Anal A List C Oct. 1947

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N III

N III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
991.579	A	17	0.02	12.47	$1\frac{1}{2}-2\frac{1}{2}$	$2p\ ^1P^{\circ}-2p^3\ ^1D$	434.066	A	7	7.08	35.52	$2\frac{1}{2}-2\frac{1}{2}$	$2p^3\ ^1P-3s\ ^1P^{\circ}$
989.790	A	16	0.00	12.47	$\frac{1}{2}-1\frac{1}{2}$	(1)	*434.129	A	5	7.07	35.50	$1\frac{1}{2}-1\frac{1}{2}$	(9)
991.514	A	14	0.02	12.47	$1\frac{1}{2}-1\frac{1}{2}$					7.06	35.50	$\frac{1}{2}-\frac{1}{2}$	
764.357	A	15	0.02	16.17	$1\frac{1}{2}-\frac{1}{2}$	$2p\ ^1P^{\circ}-2p^3\ ^1S$	434.280	A	6	7.08	35.50	$2\frac{1}{2}-1\frac{1}{2}$	
763.340	A	14	0.00	16.17	$\frac{1}{2}-\frac{1}{2}$	(2)	434.246	A	6	7.07	35.50	$1\frac{1}{2}-\frac{1}{2}$	
685.816	A	16	0.02	18.02	$1\frac{1}{2}-1\frac{1}{2}$	$2p\ ^1P^{\circ}-2p^3\ ^1P$	433.911	A	6	7.07	35.52	$1\frac{1}{2}-2\frac{1}{2}$	
685.513	A	15	0.00	18.01	$\frac{1}{2}-\frac{1}{2}$	(3)	434.014	A	6	7.06	35.50	$\frac{1}{2}-1\frac{1}{2}$	
686.335	A	14	0.02	18.01	$1\frac{1}{2}-\frac{1}{2}$		362.946	A	8	7.08	41.09	$2\frac{1}{2}-3\frac{1}{2}$	$2p^3\ ^1P-3d\ ^1D^{\circ}$
684.996	A	14	0.00	18.02	$\frac{1}{2}-1\frac{1}{2}$		*362.881	A	8	7.07	41.09	$1\frac{1}{2}-2\frac{1}{2}$	(10)
452.226	A	11	0.02	27.32	$1\frac{1}{2}-\frac{1}{2}$	$2p\ ^1P^{\circ}-3s\ ^1S$	*362.833	A	7	7.06	41.09	$\frac{1}{2}-1\frac{1}{2}$	
451.869	A	10	0.00	27.32	$\frac{1}{2}-\frac{1}{2}$	(4)	362.985	A	6	7.08	41.09	$2\frac{1}{2}-2\frac{1}{2}$	
374.441	A	12	0.02	32.99	$1\frac{1}{2}-2\frac{1}{2}$	$2p\ ^1P^{\circ}-3d\ ^1D$	*362.881	A	8	7.07	41.09	$1\frac{1}{2}-1\frac{1}{2}$	
374.204	A	11	0.00	32.99	$\frac{1}{2}-1\frac{1}{2}$	(5)	*362.833	A	7	7.06	41.08	$\frac{1}{2}-\frac{1}{2}$	
323.615	A	6	0.02	38.17	$1\frac{1}{2}-1\frac{1}{2}$	$2p\ ^1P^{\circ}-3p\ ^1P$	358.578	A	6	7.08	41.51	$2\frac{1}{2}-2\frac{1}{2}$	$2p^3\ ^1P-3d\ ^1P^{\circ}$
323.488	A	5	0.00	38.16	$\frac{1}{2}-\frac{1}{2}$	(6)	358.401	A	3	7.07	41.51	$1\frac{1}{2}-1\frac{1}{2}$	(11)
323.671	A	4	0.02	38.16	$1\frac{1}{2}-\frac{1}{2}$		358.278	A	3	7.06	41.52	$\frac{1}{2}-\frac{1}{2}$	
323.431	A	4	0.00	38.17	$\frac{1}{2}-1\frac{1}{2}$		358.509	A	5	7.08	41.51	$2\frac{1}{2}-1\frac{1}{2}$	
314.850	A	9	0.02	39.23	$1\frac{1}{2}-2\frac{1}{2}$	$2p\ ^1P^{\circ}-4d\ ^1D$	358.356	A	5	7.07	41.52	$1\frac{1}{2}-\frac{1}{2}$	
314.715	A	8	0.00	39.23	$\frac{1}{2}-1\frac{1}{2}$	(7)	358.469	A	5	7.07	41.51	$1\frac{1}{2}-2\frac{1}{2}$	
314.877	A	6	0.02	39.23	$1\frac{1}{2}-1\frac{1}{2}$		358.327	A	5	7.06	41.51	$\frac{1}{2}-1\frac{1}{2}$	
772.385	A	12	7.08	23.06	$2\frac{1}{2}-1\frac{1}{2}$	$2p^3\ ^1P-2p^3\ ^1S^{\circ}$	979.919	A	9	12.47	25.07	$2\frac{1}{2}-2\frac{1}{2}$	$2p^3\ ^1D-2p^3\ ^1D^{\circ}$
771.901	A	11	7.07	23.06	$1\frac{1}{2}-1\frac{1}{2}$	(8)	979.842	A	8	12.47	25.07	$1\frac{1}{2}-1\frac{1}{2}$	(12)
771.544	A	10	7.06	23.06	$\frac{1}{2}-1\frac{1}{2}$		772.891	A	9	12.47	28.44	$2\frac{1}{2}-1\frac{1}{2}$	$2p^3\ ^1D-2p^3\ ^1P^{\circ}$
							772.975	A	8	12.47	28.44	$1\frac{1}{2}-\frac{1}{2}$	(13)
							509.586	A	5	12.47	36.70	$2\frac{1}{2}-1\frac{1}{2}$	$2p^3\ ^1D-3s\ ^1P^{\circ}$
							509.897	A	4	12.47	36.68	$1\frac{1}{2}-\frac{1}{2}$	(14)

N III—Continued

N III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 428.180 428.244	A A	6 5	12.47 12.47	41.30 41.30	$2\frac{1}{2}-2\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$2p^3 \text{ } ^3D-3d \text{ } ^3D^\circ$ (15)	Vac 1885.25	A	10	32.99 39.54			$3d \text{ } ^3D-4f \text{ } ^3F^\circ$ (24)
418.705 418.910	A A	7 6	12.47 12.47	41.96 41.94	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$2p^3 \text{ } ^3D-3d \text{ } ^3F^\circ$ (16)	Air 2983.58 2972.60	B B	5 (4)	38.17 38.16	42.31 42.31	$1\frac{1}{2}-1\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$3p \text{ } ^3P-3d \text{ } ^3P^\circ$ (25)
1006.015	A	6	16.17	28.44	$\frac{1}{2}-$	$2p^3 \text{ } ^3S-2p^3 \text{ } ^3P^\circ$ (17)	2862.26	B	(6n)	39.54	43.85		$4f \text{ } ^3F^\circ-6g \text{ } ^3G$ (26)
472.392 472.232	A A	5 4	16.17 16.17	42.31 42.31	$\frac{1}{2}-1\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$2p^3 \text{ } ^3S-3d \text{ } ^3P^\circ$ (18)							
1751.75 1747.86 1751.24	A A A	10 9 6	18.02 18.01 18.02	25.07 25.07 25.07	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$2p^3 \text{ } ^3P-2p^3 \text{ } ^3D^\circ$ (19)	Vac *1908.11	C	7	41.30	47.77	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$3d \text{ } ^3D^\circ-4f \text{ } ^3F$ (27)
1184.544 1183.030	A A	8 7	18.02 18.01	28.44 28.44	$1\frac{1}{2}-$ $\frac{1}{2}-$	$2p^3 \text{ } ^3P-2p^3 \text{ } ^3P^\circ$ (20)	Air 2453.85 2462.56 2468.36	B B B	(4) (1) (0)	41.51 41.51 41.52	46.53 46.52 46.52	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$	$3d \text{ } ^3P^\circ-4p \text{ } ^3D^\dagger$ (28)
Air 2713.95 2714.08	B B	4 (3)	28.44 28.44	32.99 32.99	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$	$2p^3 \text{ } ^3P^\circ-3d^3 \text{ } D^\dagger$ (21)	Vac *1920.86 1921.49 *1920.86	C C C	8 4 8	41.51 41.51 41.52	47.93 47.94 47.94	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$	$3d \text{ } ^3P^\circ-4f \text{ } ^3D^\dagger$ (29)
Vac 1805.5 1804.3	A A	7 6	30.33 30.33	37.17 37.17	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$3p \text{ } ^3P^\circ-4s \text{ } ^3S$ (22)							
Air 2247.92 2248.88	B B	(6) (5)	32.99 32.99	38.48 38.48	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-\frac{1}{2}$	$3d \text{ } ^3D-4p \text{ } ^3P^\circ^\dagger$ (23)	Air 2063.99 2063.50 2068.25	B B B	(10) (10) (6)	41.96 41.94 41.96	47.93 47.92 47.92	$3\frac{1}{2}-4\frac{1}{2}$ $2\frac{1}{2}-3\frac{1}{2}$ $3\frac{1}{2}-3\frac{1}{2}$	$3d \text{ } ^3F^\circ-4f \text{ } ^3G$ (30)

N IV

I P 77.09 Anal B List C Oct. 1947

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 B L. J. Freeman, Proc. Roy. Soc. London [A] 127, 330 (1930). W L, (I), T
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N IV

N IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 765. 140	A	17	0. 00	16. 13	0-1	2s ¹ S - 2p ¹ P° (1)	Vac 335. 050	A	11	16. 13	52. 98	1-2	2p ¹ P° - 3d ¹ D (10)
247. 205	A	10	0. 00	49. 98	0-1	2s ¹ S - 3p ¹ P° (2)	285. 563	A	5	16. 13	59. 36	1-1	2p ¹ P° - 3p ¹ P (11)
923. 211	A	12	(8. 31	21. 69)	2-2	2p ¹ P° - 2p ³ P (3)	270. 995	A	6	16. 13	61. 69	1-2	2p ¹ P° - 3p ¹ D (12)
923. 045	A	10	(8. 30	21. 67)	1-1		345. 063	A	5	(21. 69	57. 46)	2-2	2p ³ P - 3s ³ P°† (13)
924. 274	A	10	(8. 31	21. 67)	2-1		345. 107	A	3	(21. 67	57. 44)	1-1	
923. 669	A	10	(8. 30	21. 66)	1-0		303. 123	A	6	(21. 69	62. 41)	2-3	2p ³ P - 3d ³ D° (14)
921. 982	A	10	(8. 30	21. 69)	1-2		303. 048	A	5	(21. 67	62. 41)	1-2	
922. 507	A	10	(8. 29	21. 67)	0-1		303. 009	A	4	(21. 66	62. 40)	0-1	
322. 724	A	9	(8. 31	46. 57)	2-1	2p ¹ P° - 3s ¹ S (4)	303. 163	A	4	(21. 69	62. 41)	2-2	
322. 570	A	8	(8. 30	46. 57)	1-1		303. 079	A	4	(21. 67	62. 40)	1-1	
322. 503	A	7	(8. 29	46. 57)	0-1		297. 815	A	5	(21. 69	63. 14)	2-2	2p ³ P - 3d ³ P°† (15)
283. 579	A	12	(8. 31	51. 85)	2-3	2p ¹ P° - 3d ¹ D† (5)	*297. 644	A	4b	(21. 67	63. 14)	1-1	
283. 470	A	11	(8. 30	51. 85)	1-2					(21. 67	63. 14)	1-0	
283. 420	A	10	(8. 29	51. 85)	0-1								
225. 025	A	5	(8. 31	63. 13)	2-3	2p ¹ P° - 4d ¹ D (6)	351. 931	A	5	23. 32	58. 40	2-1	2p ³ D - 3s ¹ P° (16)
225. 136	A	4	(8. 30	63. 13)	1-2		323. 175	A	7	23. 32	61. 52	2-2	2p ³ D - 3d ¹ D° (17)
225. 098	A	3	(8. 29	63. 13)	0-1		315. 053	A	8	23. 82	62. 50	2-3	2p ³ D - 3d ¹ F° (18)
1718. 52	A	10	16. 13	23. 32	1-2	2p ¹ P° - 2p ³ D (7)	Air 2646. 89	B	(8)	(63. 78	68. 44)	4-5	4f ¹ F° - 5g ¹ G (19)
955. 335	A	10	16. 13	29. 06	1-0	2p ¹ P° - 2p ³ S (8)	2646. 10	B	(7)	(63. 78	68. 44)	3-4	
387. 353	A	4	16. 13	48. 00	1-0	2p ¹ P° - 3s ¹ S (9)	2645. 57	B	(7)	(63. 78	68. 44)	2-3	

N v

I P 97.47 Anal B List C Oct. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 44 (1934). W L, I, T

N v

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1238. 800	A	8	0. 00	9. 97	½-1½	2s ¹ S - 2p ¹ P° (1)
1242. 778	A	7	0. 00	9. 93	½- ½	
209. 270	A	7	0. 00	58. 99	½-1½	2s ¹ S - 3p ¹ P° (2)
209. 303	A	6	0. 00	58. 98	½- ½	
162. 562	A	4	0. 00	75. 94	½-	2s ¹ S - 4p ¹ P° (3)
266. 375	A	7	9. 97	56. 31	1½- ½	2p ¹ P° - 3s ¹ S (4)
266. 192	A	6	9. 93	56. 31	½- ½	
247. 710	A	11	9. 97	59. 80	1½-2½	2p ¹ P° - 3d ¹ D (5)
247. 563	A	10	9. 93	59. 80	½-1½	
186. 153	A	5	9. 97	76. 28	1½-2½	2p ¹ P° - 4d ¹ D (6)
186. 070	A	4	9. 93	76. 28	½-1½	

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O I

I P 13.56 Anal A List C Dec. 1947

REFERENCES

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 B B. Edlén, Kungl. Svenska Vetenskapsakad. Handl. [3] **20**, No. 10, p. 26 (1943). W L, T
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O I

O I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1355.605	B	8	0.00	9.11	2-2	$2p^4 \text{ } ^1P-3s \text{ } ^1S^{\circ}$	1152.129	A	(5)	1.96	12.67	2-2	$2p^4 \text{ } ^1D-3s' \text{ } ^1D^{\circ}$
1358.524	B	5	0.02	9.11	1-2	(1)							(6)
1302.174†	A	10	0.00	9.48	2-1	$2p^4 \text{ } ^1P-3s \text{ } ^1S^{\circ}$	999.493	A	(2)	1.96	14.31	2-1	$2p^4 \text{ } ^1D-3s'' \text{ } ^1P^{\circ}$
1304.858	A	10	0.02	9.48	1-1	(2)							(7)
1306.023	A	10	0.03	9.48	0-1		923.011	B	(-)	1.96	15.35	2-3	$2p^4 \text{ } ^1D-3d' \text{ } ^1F^{\circ}$
1039.226	B	8	0.00	11.88	2-1	$2p^4 \text{ } ^1P-4s \text{ } ^1S^{\circ}$							(8)
1040.932	A	8	0.02	11.88	1-1	(3)							
1041.686	A	7	0.03	11.88	0-1		1217.643	A	(2)	4.17	14.31	0-1	$2p^4 \text{ } ^1S-3s'' \text{ } ^1P^{\circ}$
1025.766	B	9	0.00	12.03	2-	$2p^4 \text{ } ^1P-3d \text{ } ^1D^{\circ}$							(9)
1027.421	A	8	0.02	12.03	1-	(4)							
1028.155	B	7	0.03	12.03	0-1								
988.775	C	(8)	0.00	12.49	2-3	$2p^4 \text{ } ^1P-3s' \text{ } ^1D^{\circ} \dagger$	Air						
990.205	A	(8)	0.02	12.49	1-2	(5)	2883.78	D	(3)	10.94	15.22	-2	$3p \text{ } ^1P-3d' \text{ } ^1P^{\circ}$
990.794	A	(4)	0.03	12.49	0-1		2878.95	D	(2)	10.94	15.23	-1	(10)
							2876.30	D	(1n)	10.94	15.23	1-0	

O II

I P 35.00 Anal A List D Dec. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 136 (1934). W L, I, T
 B A. Fowler, Proc. Roy. Soc. London [A] 110, 476 (1926). W L, I, T
 C. Mihul, Ann. de Phys. [10] 9, 261 (1928). T

O II

O II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
834.462†	A	15	0.00	14.79	1½-2½	2p³ ¹S°-2p¹ ¹P	672.948	A	8	5.00	23.34	-1½	2p³ ¹P°-3s ¹P
833.326	A	15	0.00	14.81	1½-1½	(1)	673.768	A	7	5.00	23.32	-½	(12)
832.754	A	14	0.00	14.82	1½-½		644.148	A	12	5.00	24.16	-½	2p³ ¹P°-2p¹ ¹S
539.086	A	8	0.00	22.90	1½-2½	2p³ ¹S°-3s ¹P							(13)
539.547	A	8	0.00	22.88	1½-1½	(2)	600.585	A	6	5.00	25.55		2p³ ¹P°-3s' ¹D
539.853	A	7	0.00	22.87	1½-½								(14)
430.177	A	6	0.00	28.70	1½-2½	2p³ ¹S°-3d ¹P	580.967	A	7	5.00	26.24	-1½	2p³ ¹P°-2p¹ ¹P
430.041	A	6	0.00	28.71	1½-1½	(3)	580.400	A	6	5.00	26.27	-½	(15)
429.918	A	5	0.00	28.71	1½-½		518.242	A	5	5.00	28.82	-1½	2p³ ¹P°-3d ¹P
							517.937	A	4	5.00	28.83	-½	(16)
718.484	A	17	3.31	20.49	2½-	2p³ ¹D°-2p¹ ¹D	515.498	A	5	5.00	28.94	1½-2½	2p³ ¹P°-3d ¹D
718.562	A	16	3.31	20.49	1½-	(4)	515.640	A	4	5.00	28.94	-1½	(17)
616.291	A	7	3.31	23.34	2½-1½	2p³ ¹D°-3s ¹P							
617.051	A	6	3.31	23.32	1½-½	(5)							
616.363	A	4	3.31	23.34	1½-1½		Air						
555.056	A	5	3.31	25.55	2½-	2p³ ¹D°-3s' ¹D	2445.55	B	10	23.34	28.39	1½-2½	3s ¹P-3p' ¹D°
555.121	A	5	3.31	25.55	1½-	(6)	2433.56	B	9	23.32	28.39	½-1½	(18)
							2444.26	B	5	23.34	28.39	1½-1½	
538.256	A	10	3.31	26.24	2½-1½	2p³ ¹D°-2p¹ ¹P	2300.35	B	8	23.34	28.71	1½-1½	3s ¹P-3p' ¹P°†
537.830	A	9	3.31	26.27	1½-½	(7)	2293.32	B	6	23.32	28.70	½-½	(19)
538.318	A	7	3.31	26.24	1½-1½								
485.086	A	6	3.31	28.76	2½-3½	2p³ ¹D°-3d ¹F†							
485.515	A	5	3.31	28.74	1½-2½	(8)	2733.34	B	10	25.18	29.69	½-1½	3p ¹S°-4s ¹P
483.976	A	5	3.31	28.82	2½-1½	2p³ ¹D°-3d ¹P†	2747.46	B	6	25.18	29.67	½-½	(20)
483.752	A	4	3.31	28.83	1½-½	(9)							
481.587	A	4	3.31	28.94	2½-2½	2p³ ¹D°-3d ¹D†	2530.30	B	5	26.14	31.01	2½-3½	3p ¹D°-3d' ¹F
481.755	A	3	3.31	28.94		(10)	2517.97	B	4	26.11	31.01	1½-2½	(21)
796.661	A	10	5.00	20.49		2p³ ¹P°-2p¹ ¹D	2575.300	B	6	26.45	31.24	1½-2½	3p ¹P°-3d' ¹D†
						(11)	2571.476	B	4	26.44	31.24	½-1½	(22)

O III

I P 54.71 Anal A List C Oct. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 126 (1934). W L, I, T
 B A. Fowler, Proc. Roy. Soc. London [A] 117, 317 (1928). W L, I, T
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O III

O III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
835.292	A	16	0.04	14.82	2-3	$2p^2 \ ^1P - 2p^2 \ ^1D^\circ$ (1)	597.818	A	15	5.33	25.93	0-1	$2p^2 \ ^1S - 2p^2 \ ^1P^\circ$ (13)
833.742	A	16	0.01	14.82	1-2, 1		434.975	A	10	5.33	33.71	0-1	
835.096	A	14	0.04	14.82	2-2, 1		345.309	A	10	5.33	41.08	0-1	
832.927	A	14	0.00	14.82	0-1								
703.850	A	18	0.04	17.58	2-2, 1	$2p^2 \ ^1P - 2p^2 \ ^1P^\circ$ (2)							
702.899	A	17	0.01	17.58	1-2, 1								
702.822	A	16	0.01	17.58	1-0								
702.332	A	16	0.00	17.58	0-1								
508.182	A	18	0.04	24.33	2-1	$2p^2 \ ^1P - 2p^2 \ ^1S^\circ$ (3)	610.746	A	8	14.82	35.03	3-2	$2p^2 \ ^1D^\circ - 2p^2 \ ^1P$ (16)
507.683	A	17	0.01	24.33	1-1		*610.043	A	7	14.82	35.06	2-1	
507.391	A	16	0.00	24.33	0-1		609.705	A	6	14.82	35.07	1-0	
							610.850	A	6	14.82	35.03	2-2	
374.075	A	10	0.04	33.04	2-2	$2p^2 \ ^1P - 3s \ ^1P^\circ$ (4)	*610.043	A	7	14.82	35.06	1-1	
374.165	A	8	0.01	33.01	1-1								
374.436	A	8	0.04	33.01	2-1								
374.331	A	8	0.01	32.99	1-0								
373.805	A	8	0.01	33.04	1-2	$2p^2 \ ^1P - 3d \ ^1D^\circ$ (5)	898.957	A	8	23.09	36.82	2-2	$2p^2 \ ^1D^\circ - 2p^2 \ ^1D$ (17)
374.005	A	8	0.00	33.01	0-1								
305.769	A	10	0.04	40.41	2-3								
305.656	A	9	0.01	40.40	1-2								
305.596	A	8	0.00	40.40	0-1	$2p^2 \ ^1P - 3d \ ^1P^\circ$ (6)	Air						
305.836	A	8	0.04	40.40	2-2		2983.78	B	9	33.71	37.85	1-2	$3s \ ^1P^\circ - 3p \ ^1D$ (18)
305.703	A	8	0.01	40.40	1-1		2454.99	B	8	33.71	38.74	1-0	
305.879	A	4	0.04	40.40	2-1								
303.799	A	9	0.04	40.67	2-2	$2p^2 \ ^1P - 3d \ ^1P^\circ$ (6)	2597.69	B	8	40.67	45.42	2-1	$3d \ ^1P^\circ - 4p \ ^1S^\dagger$ (20)
303.515	A	7	0.01	40.69	1-1		2605.41	B	6	40.69	45.42	1-1	
303.693	A	7	0.04	40.69	2-1		2558.06	B	8	40.96	45.79	3-2	$3d \ ^1F^\circ - 4p \ ^1D$ (21)
303.460	A	7	0.01	40.69	1-0								
303.621	A	7	0.01	40.67	1-2	$2p^2 \ ^1D - 3d \ ^1D^\circ$ (10)	2686.14	B	10	41.78	46.37	3-2	$3s \ ^1P - 3p \ ^1S^\circ$ (22)
303.411	A	7	0.00	40.69	0-1		2674.57	B	8	41.76	46.37	2-2	
							2665.69	B	7	41.74	46.37	1-2	
599.598	A	18	2.50	23.09	2-2	$2p^2 \ ^1D - 2p^2 \ ^1D^\circ$ (7)	2695.49	B	6	44.85	49.42	1-2	$3p \ ^1S^\circ - 3d \ ^1P$ (23)
525.795	A	18	2.50	25.98	2-1		2687.53	B	5	44.85	49.44	1-1	
395.558	A	12	2.50	33.71	2-1		2683.65	B	4	44.85	49.44	1-0	
328.448	A	10	2.50	40.09	2-2								
320.979	A	12	2.50	40.96	2-3	$2p^2 \ ^1D - 3d \ ^1F^\circ$ (11)							
277.385	A	7	2.50	47.01	2-3								

O IV

I P 77.08 Anal A List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 92 (1934). W L, I, T

O IV

O IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
790. 203	A	16	0. 05	15. 67	$1\frac{1}{2}-2\frac{1}{2}$	$2p\ ^1P^{\circ}-2p^3\ ^1D$							
787. 710	A	15	0. 00	15. 67	$\frac{1}{2}-1\frac{1}{2}$	(1)							
790. 103	A	13	0. 05	15. 67	$1\frac{1}{2}-1\frac{1}{2}$		625. 852	A	14	8. 83	28. 55	$2\frac{1}{2}-1\frac{1}{2}$	$2p^3\ ^1P-2p^3\ ^1S^{\circ}$
609. 829	A	15	0. 05	20. 29	$1\frac{1}{2}-\frac{1}{2}$	$2p\ ^1P^{\circ}-2p^3\ ^1S$	625. 130	A	14	8. 80	28. 55	$1\frac{1}{2}-1\frac{1}{2}$	(6)
608. 395	A	14	0. 00	20. 29	$\frac{1}{2}-\frac{1}{2}$	(2)	624. 617	A	13	8. 79	28. 55	$\frac{1}{2}-1\frac{1}{2}$	
554. 514	A	18	0. 05	22. 31	$1\frac{1}{2}-1\frac{1}{2}$	$2p\ ^1P^{\circ}-2p^3\ ^1P$	233. 561	A	8	8. 83	61. 68	$2\frac{1}{2}-3\frac{1}{2}$	$2p^3\ ^1P-3d\ ^1D^{\circ}\dagger$
554. 074	A	17	0. 00	22. 28	$\frac{1}{2}-\frac{1}{2}$	(3)	233. 495	A	7	8. 80	61. 67	$1\frac{1}{2}-2\frac{1}{2}$	(7)
555. 262	A	16	0. 05	22. 28	$1\frac{1}{2}-\frac{1}{2}$		*233. 457	A	7	8. 79	61. 67	$\frac{1}{2}-$	
553. 328	A	16	0. 00	22. 31	$\frac{1}{2}-1\frac{1}{2}$								
279. 937	A	11	0. 05	44. 15	$1\frac{1}{2}-\frac{1}{2}$	$2p\ ^1P^{\circ}-3s\ ^1S$	779. 905	A	10	15. 67	31. 50	$2\frac{1}{2}-2\frac{1}{2}$	$2p^3\ ^1D-2p^3\ ^1D^{\circ}$
279. 633	A	10	0. 00	44. 15	$\frac{1}{2}-\frac{1}{2}$	(4)	779. 821	A	9	15. 67	31. 50	$1\frac{1}{2}-1\frac{1}{2}$	(8)
238. 573	A	15	0. 05	51. 79	$1\frac{1}{2}-2\frac{1}{2}$	$2p\ ^1P^{\circ}-3d\ ^1D$	260. 389	A	10	15. 67	63. 08	$2\frac{1}{2}-3\frac{1}{2}$	$2p^3\ ^1D-3d\ ^1F^{\circ}$
238. 361	A	14	0. 00	51. 79	$\frac{1}{2}-1\frac{1}{2}$	(5)	260. 556	A	9	15. 67	63. 05	$1\frac{1}{2}-2\frac{1}{2}$	(9)

O V

I P 113.38 Anal A List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 65 (1934). W L, I, T

O V

O V

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 629. 732	A	15	0. 00	19. 60	0-1	$2s^2 \text{ } ^1\text{S} - 2p \text{ } ^1\text{P}^\circ$ (1)	Vac 774. 522	A	7	19. 60	35. 54	1-0	$2p \text{ } ^1\text{P}^\circ - 2p^3 \text{ } ^1\text{S}$ (8)
172. 168	A	12	0. 00	71. 70	0-1	$2s^2 \text{ } ^1\text{S} - 3p \text{ } ^1\text{P}^\circ$ (2)	248. 459	A	6	19. 60	69. 29	1-0	$2p \text{ } ^1\text{P}^\circ - 3s \text{ } ^1\text{S}$ (9)
760. 445	A	12	(10. 19	26. 43)	2-2	$2p \text{ } ^1\text{P}^\circ - 2p^3 \text{ } ^1\text{P}$ (3)	220. 352	A	13	19. 60	75. 63	1-2	$2p \text{ } ^1\text{P}^\circ - 3d \text{ } ^1\text{D}$ (10)
760. 229	A	10	(10. 15	26. 39)	1-1		194. 593	A	8	19. 60	83. 04	1-1	$2p \text{ } ^1\text{P}^\circ - 3p \text{ } ^1\text{P}$ (11)
762. 001	A	10	(10. 19	26. 39)	2-1		185. 747	A	9	19. 60	86. 07	1-2	$2p \text{ } ^1\text{P}^\circ - 3p \text{ } ^1\text{D}$ (12)
761. 130	A	10	(10. 15	26. 37)	1-0	$2p \text{ } ^1\text{P}^\circ - 3s \text{ } ^1\text{S}$ (4)	203. 890	A	8	(26. 43	86. 97)	2-3	$2p^3 \text{ } ^1\text{P} - 3d \text{ } ^1\text{D}^\circ$ (13)
758. 677	A	10	(10. 15	26. 43)	1-2		203. 821	A	7	(26. 39	86. 96)	1-2	
759. 440	A	10	(10. 14	26. 39)	0-1		203. 783	A	6	(26. 37	86. 95)	0-1	
215. 245	A	9	(10. 19	67. 55)	2-1	$2p \text{ } ^1\text{P}^\circ - 3d \text{ } ^1\text{D}$ (5)	202. 393	A	7	(26. 43	87. 42)	2-2	$2p^3 \text{ } ^1\text{P} - 3d \text{ } ^1\text{P}^\circ$ (14)
215. 104	A	8	(10. 15	67. 55)	1-1		202. 226	A	5	(26. 39	87. 44)	1-1	
215. 034	A	7	(10. 14	67. 55)	0-1		202. 335	A	5	(26. 43	87. 44)	2-1	
192. 906	A	14	(10. 19	74. 19)	2-3	$2p \text{ } ^1\text{P}^\circ - 3p \text{ } ^1\text{D}$ (6)	202. 282	A	5	(26. 39	87. 42)	1-2	$2p^3 \text{ } ^1\text{D} - 3d \text{ } ^1\text{D}^\circ$ (15)
192. 800	A	13	(10. 15	74. 19)	1-2		216. 018	A	8	28. 61	85. 75	2-2	
192. 751	A	12	(10. 14	74. 18)	0-1		207. 794	A	10	28. 61	88. 02	2-3	$2p^3 \text{ } ^1\text{D} - 3d \text{ } ^1\text{F}^\circ$ (16)
*167. 991	A	8	(10. 19	83. 68)	2-3 1-2 0-1	$2p \text{ } ^1\text{P}^\circ - 3p \text{ } ^1\text{D}$ (6)							
168. 077	A	4	(10. 19	83. 64)	2-2								
168. 042	A	4	(10. 15	83. 62)	1-1								
1371. 287	A	10	19. 60	28. 61	1-2	$2p \text{ } ^1\text{P}^\circ - 2p^3 \text{ } ^1\text{D}$ (7)							

O VI

I P 137.52 Anal B List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 45 (1934). W L, I, T

O VI

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1031. 912	A	10	0. 00	11. 96	$\frac{1}{2} - 1\frac{1}{2}$	$2s \text{ } ^2\text{S} - 2p \text{ } ^2\text{P}^\circ$ (1)
1037. 613	A	9	0. 00	11. 90	$\frac{1}{2} - \frac{1}{2}$	
150. 088	A	10	0. 00	82. 25	$\frac{1}{2} - 1\frac{1}{2}$	$2s \text{ } ^2\text{S} - 3p \text{ } ^2\text{P}^\circ$ (2)
150. 124	A	9	0. 00	82. 23	$\frac{1}{2} - \frac{1}{2}$	
184. 117	A	9	11. 96	79. 01	$1\frac{1}{2} - \frac{1}{2}$	$2p \text{ } ^2\text{P}^\circ - 3s \text{ } ^2\text{S}$ (3)
183. 937	A	8	11. 90	79. 01	$\frac{1}{2} - \frac{1}{2}$	
173. 082	A	13	11. 96	83. 29	$1\frac{1}{2} - 2\frac{1}{2}$	$2p \text{ } ^2\text{P}^\circ - 3d \text{ } ^1\text{D}$ (4)
172. 935	A	12	11. 90	83. 28	$\frac{1}{2} - 1\frac{1}{2}$	
129. 872	A	6	11. 96	107. 02	$1\frac{1}{2} - 2\frac{1}{2}$	$2p \text{ } ^2\text{P}^\circ - 4d \text{ } ^1\text{D}$ (5)
129. 786	A	5	11. 90	107. 02	$\frac{1}{2} - 1\frac{1}{2}$	

FLUORINE

F I

I P 17.35 Anal B List D Dec. 1947

REFERENCE

A K. Lidén, Ark. Fysik (Stockholm) I, No. 9, 251 (1949). W L, I, T

F I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
954.825†	A	1000	0.00	12.93	1½-1½	2p ⁴ 1P°-3s ² 1P (1)
955.545	A	750	0.05	12.97	½-½	
951.871	A	500	0.00	12.97	1½-½	
958.524	A	500	0.05	12.93	½-1½	
806.964	A	150	0.00	15.30	1½-2½	2p ⁴ 1P°-3s ² 1D (2)
809.599	A	125	0.05	15.30	½-1½	

F II

I P 34.84 Anal B List D Dec. 1947

REFERENCES

A I. S. Bowen, Phys. Rev. **45**, 82 (1934). W L, I, T
 B. Edlén, Zeit. Phys. **93**, 433 (1935). T
 H. Dingle, Proc. Roy. Soc. London [A] **128**, 600 (1930). T

F II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
606.81†	A	9	0.00	20.34	2-2	2p ⁴ 1P-2p ⁴ 1P° (1)
606.95	A	4	0.04	20.38	1-1	
605.67	A	8	0.00	20.38	2-1	
606.27	A	7	0.04	20.40	1-0	
608.06	A	8	0.04	20.34	1-2	
607.48	A	7	0.06	20.38	0-1	
546.846	A	6	0.00	22.57	2-1	2p ⁴ 1P-3s ² 1S° (2)
547.873	A	4	0.04	22.57	1-1	
548.324	A	3	0.06	22.57	0-1	
471.990	A	6	0.00	26.15	2-3	2p ⁴ 1P-3s ² 1D° (3)
472.710	A	5	0.04	26.16	1-2	
473.021	A	3	0.06	26.16	0-1	

Ne II

I P 40.91 Anal A List C Nov. 1948

REFERENCES

- A J. C. Boyce, Phys. Rev. **46**, 378 (1934). W L, I, T
 B T. L. de Bruin und C. J. Bakker, Zeit. Phys. **69**, 19 (1931). W L, I, T

Ne II

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
460.725†	A	15	0.00	26.79	$1\frac{1}{2}-\frac{1}{2}$	$2p^4\ ^1P^o-2p^4\ ^3S$	1688.38	A	4	26.79	34.11	$\frac{1}{2}-1\frac{1}{2}$	$2p^4\ ^3S-3p\ ^1P^o$
462.388	A	14	0.10	26.79	$\frac{1}{2}-\frac{1}{2}$	(1)	1681.70	A	3	26.79	34.14	$\frac{1}{2}-\frac{1}{2}$	(7)
456.344	A	4	0.00	27.05	$1\frac{1}{2}-2\frac{1}{2}$	$2p^4\ ^1P^o-3s\ ^1P$							
456.895	A	5	0.10	27.12	$\frac{1}{2}-1\frac{1}{2}$	(2)							
455.270	A	7	0.00	27.12	$1\frac{1}{2}-1\frac{1}{2}$		Air						
454.648	A	5	0.10	27.15	$1\frac{1}{2}-\frac{1}{2}$		2955.73	B	7	27.05	31.23	$2\frac{1}{2}-1\frac{1}{2}$	$3s\ ^1P-3p\ ^3S^{\dagger}$
446.252	A	8	0.00	27.66	$1\frac{1}{2}-1\frac{1}{2}$	$2p^4\ ^1P^o-3s\ ^3P$	3011.65	B	6	27.12	31.23	$1\frac{1}{2}-1\frac{1}{2}$	(8)
446.591	A	7	0.10	27.74	$\frac{1}{2}-\frac{1}{2}$	(3)							
445.032	A	7	0.00	27.74	$1\frac{1}{2}-\frac{1}{2}$								
447.813	A	8	0.10	27.66	$\frac{1}{2}-1\frac{1}{2}$		Vac						
405.852	A	9	0.00	30.42	$1\frac{1}{2}-$	$2p^4\ ^1P^o-3s'\ ^3D$	1916.16	B	10	27.66	34.11	$1\frac{1}{2}-1\frac{1}{2}$	$3s\ ^3P-3p'\ ^1P^o$
407.136	A	8	0.10	30.42	$\frac{1}{2}-1\frac{1}{2}$	(4)	1930.11	B	8	27.74	34.14	$\frac{1}{2}-\frac{1}{2}$	(9)
361.427	A	5	0.00	34.16	$1\frac{1}{2}-\frac{1}{2}$	$2p^4\ ^1P^o-3s''\ ^3S$	1907.56	B	8	27.66	34.14	$1\frac{1}{2}-\frac{1}{2}$	
362.456	A	4	0.10	34.16	$\frac{1}{2}-\frac{1}{2}$	(5)	1938.92	B	8	27.74	34.11	$\frac{1}{2}-1\frac{1}{2}$	
356.795	A	5d	0.00	34.60	$1\frac{1}{2}-2\frac{1}{2}$	$2p^4\ ^1P^o-3d\ ^3D$							
357.534	A	5	0.10	34.62	$\frac{1}{2}-1\frac{1}{2}$	(6)	Air						
356.534	A	3	0.00	34.62	$1\frac{1}{2}-1\frac{1}{2}$		2792.05	B	5	30.39	34.81	$2\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^o-4s\ ^1P^{\dagger}$
							2780.06	B	2	30.42	34.86	$1\frac{1}{2}-1\frac{1}{2}$	(10)
							2770.06	B	1	30.44	34.90	$\frac{1}{2}-\frac{1}{2}$	

Ne III

I P 63.5 Anal C List C Sept. 1948

REFERENCES

- A J. C. Boyce, Phys. Rev. **46**, 378 (1934). W L, I, T
 B V. v. Keussler, Zeit. Phys. **85**, 1 (1933). W L, I
 C T. L. de Bruin, Zeit. Phys. **77**, 505 (1932). W L, I, T

Ne III

Ne III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
489.501	A	10	0.00	25.22	2-2	$2p^4\ ^1P - 2p^4\ ^1P^o$	301.124	A	4	3.19	44.19	2-2	$2p^4\ ^1D - 3s'\ ^1D^o$
489.641	A	4	0.08	25.29	1-1	(1)							(7)
488.103	A	8	0.00	25.29	2-1		282.50	A	0	3.19	46.89	2-1	$2p^4\ ^1D - 3s''\ ^1P^o$
488.868	A	7	0.08	25.33	1-0								(8)
491.050	A	9	0.08	25.22	1-2								
490.310	A	7	0.11	25.29	0-1								
313.048	A	4	0.00	39.44	2-1	$2p^4\ ^1P - 3s\ ^1S^o$	427.840	A	3	6.88	35.74	0-1	$2p^4\ ^1S - 2p^4\ ^1P^o$
313.677	A	3	0.08	39.44	1-1	(2)							(9)
313.92	A	1	0.11	39.44	0-1		308.559	A	1	6.88	46.89	0-1	$2p^4\ ^1S - 3s''\ ^1P^o$
283.206	B	6	0.00	43.60	2-3	$2p^4\ ^1P - 3s'\ ^1D^o$							(10)
*283.690	B	3u	0.08	43.60	1-2	(3)							
283.894	B	3	0.11	43.60	0-1								
*283.178	B	3u	0.00	43.60	2-2		Air						
*283.690	B	3u	0.08	43.60	1-1		2590.04	C	40	(38.78	43.55)	2-3	$3s\ ^1S^o - 3p\ ^1P$
*283.178	B	3u	0.00	43.60	2-1		2593.60	C	30	(38.78	43.54)	2-2	(11)
267.059	B	3u	0.00	46.22	2-2, 1	$2p^4\ ^1P - 3s''\ ^1P^o$	2595.68	C	20	(38.78	43.54)	2-1	
267.516	B	3u	0.08	46.23	1-	(4)							
267.709	B	2	0.11	46.23	0-1		2677.90	C	30	39.44	44.04	1-2, 0	$3s\ ^1S^o - 3p\ ^1P$
251.145	B	2u	0.00	49.16	2-	$2p^4\ ^1P - 3d\ ^1D^o$	2678.64	C	25	39.44	44.04	1-1	(12)
251.558	B	2	0.08	49.16	1-2, 1	(5)							
251.726	B	2	0.11	49.16	0-1		Vac						
							1257.190	A	6	39.44	49.25	1-2	$3s\ ^1S^o - 3p'\ ^1P$
							1255.685	A	5	39.44	49.27	1-1	(13)
							1255.026	A	2	39.44	49.27	1-0	
379.308	A	7	3.19	35.74	2-1	$2p^4\ ^1D - 2p^4\ ^1P^o$							
						(6)							

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Na I

I P 5.12 Anal A List C July 1947

REFERENCE

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 H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by
 R. Ritschl, p. 193 (Julius Springer, Berlin, 1939). (I)

Na I

Na I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2852.828	A	6R	0.00	4.33	$\frac{1}{2}-1\frac{1}{2}$	$3s^2S-5p^2P^o$	2543.817	A	-----	0.00	4.85	$\frac{1}{2}-1\frac{1}{2}$	$3s^2S-8p^2P^o$
2853.031	A	5R	0.00	4.33	$\frac{1}{2}-\frac{1}{2}$	(1)	2543.875	A	-----	0.00	4.85	$\frac{1}{2}-\frac{1}{2}$	(4)
2680.335	A	5R	0.00	4.60	$\frac{1}{2}-1\frac{1}{2}$	$3s^2S-6p^2P^o$	2512.128	A	-----	0.00	4.91	$\frac{1}{2}-1\frac{1}{2}$	$3s^2S-9p^2P^o$
2680.443	A	4R	0.00	4.60	$\frac{1}{2}-\frac{1}{2}$	(2)	2512.210	A	-----	0.00	4.91	$\frac{1}{2}-\frac{1}{2}$	(5)
2593.828	A	(3R)	0.00	4.76	$\frac{1}{2}-1\frac{1}{2}$	$3s^2S-7p^2P^o$	2490.733	A	-----	0.00	4.95	$\frac{1}{2}-$	$3s^2S-10p^2P^o$
2593.927	A	(2R)	0.00	4.76	$\frac{1}{2}-\frac{1}{2}$	(3)							(6)

Na II

I P 47.10 Anal B List C June 1947

REFERENCES

- A J. Söderqvist, *Nova Acta Reg. Soc. Sci. Uppsala* [IV] 9, No. 7, p. 26 (1934). W L, I, T
 B S. Frisch, *Zeit. Phys.* 70, 498 (1931). W L, I, T

Na II

Na II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
376.375	A	3	0.00	32.80	0-1	$2p^2\ ^1S-3s\ [1\frac{1}{2}]^o$	2974.991	B	6	32.87	37.02	0-1	$3s'\ [1\frac{1}{2}]^o-3p'\ [1\frac{1}{2}]$
372.069†	A	6	0.00	33.18	0-1	$2p^2\ ^1S-3s'\ [1\frac{1}{2}]^o$							(9)
301.432	A	1	0.00	40.95	0-1	$2p^2\ ^1S-3d\ [1\frac{1}{2}]^o$	2671.829	B	6	36.20	40.82	1-1	$3p\ [1\frac{1}{2}]-3d\ [1\frac{1}{2}]^o$
300.151	A	1	0.00	41.13	0-1	$2p^2\ ^1S-3d'\ [1\frac{1}{2}]^o$	2660.996	B	7	36.20	40.84	1-2	$3p\ [1\frac{1}{2}]-3d\ [1\frac{1}{2}]^o$
						(4)	2611.815	B	7	36.20	40.92	1-2	$3p\ [1\frac{1}{2}]-4s\ [1\frac{1}{2}]^o$
Air							2531.548	B	6	36.20	41.07	1-0	$3p\ [1\frac{1}{2}]-4s'\ [1\frac{1}{2}]^o$
2917.516	B	5	32.71	36.94	2-2	$3s\ [1\frac{1}{2}]^o-3p\ [1\frac{1}{2}]$							(12)
*2984.183	B	7	32.80	36.94	1-2	(5)	2951.231	B	8	36.70	40.88	3-4	$3p\ [2\frac{1}{2}]-3d\ [3\frac{1}{2}]^o$
2859.481	B	5	32.71	37.02	2-1	$3s\ [1\frac{1}{2}]^o-3p'\ [1\frac{1}{2}]$							(14)
2841.721	B	7	32.71	37.05	2-2	$3s\ [1\frac{1}{2}]^o-3p'\ [1\frac{1}{2}]$	*2984.183	B	7	36.81	40.94	1-2	$3p\ [1\frac{1}{2}]-3d\ [2\frac{1}{2}]^o$
2904.914	B	7	32.80	37.05	1-2	(7)							(15)
2881.140	B	6	32.80	37.08	1-0	$3s\ [1\frac{1}{2}]^o-3p\ [1\frac{1}{2}]$	2893.946	B	6	36.81	41.07	1-0	$3p\ [1\frac{1}{2}]-4s'\ [1\frac{1}{2}]^o$
						(8)							(16)

MAGNESIUM

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I P 7.61 Anal A List C July 1947

REFERENCES

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Mg I

Mg I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2852.120†	A	300R	0.00	4.33	0-1	3s ² 1S - 3p 1P° (1)	2736.559	A	10n	2.70	7.21	2-3	3p 1P° - 6d 1D
							2733.509	A	5n	2.70	7.21	1-	(9)
2025.82	A	(15n)	0.00	6.09	0-1	3s ² 1S - 4p 1P° (2)	2732.009	A		2.70	7.21	0-	
							2698.16	A	5	2.70	7.28	2-1	3p 1P° - 8s 1S
2941.990	A	8	2.70	6.90	2-1	3p 1P° - 6s 1S	2695.19	A	4	2.70	7.28	1-1	(10)
2938.469	A	4	2.70	6.90	1-1	(3)	2693.74	A	3	2.70	7.28	0-1	
2936.735	A	2	2.70	6.90	0-1		2672.56	A	6	2.70	7.32	2-3	3p 1P° - 7d 1D
2906.35	A	(5)	2.70	6.95	2-2	3p 1P° - 5d 1D	2669.63	A	5	2.70	7.32	1-	(11)
2902.90	A	(3)	2.70	6.95	1-2	(4)	2668.23	A	4	2.70	7.32	0-	
2851.647	A	8	2.70	7.03	2-3	3p 1P° - 5d 1D	2649.12	A	4	2.70	7.36	2-1	3p 1P° - 9s 1S
2848.338	A	7	2.70	7.03	1-	(5)	2646.26	A	3	2.70	7.36	1-1	(12)
2846.711	A	6	2.70	7.03	0-		2644.87	A	2	2.70	7.36	0-1	
*2779.832	A	12	2.70	7.14	2-2	3p 1P° - 3p ² 1P	2632.94	A	5	2.70	7.39	2-3	3p 1P° - 8d 1D
			2.70	7.14	1-1	(6)	2630.10	A	4	2.70	7.39	1-	(13)
2782.974	A	10	2.70	7.14	2-1		2628.72	A	4	2.70	7.39	0-	
*2781.418	A	10	2.70	7.14	1-0		2617.56	A	3	2.70	7.42	2-1	3p 1P° - 10s 1S
*2776.695	A	10	2.70	7.14	1-2		2614.74	A	2	2.70	7.42	1-1	(14)
*2778.277	A	10	2.70	7.14	0-1		2613.37	A		2.70	7.42	0-1	
*2781.418	A	10	2.70	7.14	2-1	3p 1P° - 7s 1S							
*2778.277	A	10	2.70	7.14	1-1	(7)							
*2776.695	A	10	2.70	7.14	0-1		2915.447	A	(7)	5.73	9.96	2-3	3s 1D - 3d 1F°
													(15)
2768.346	A	(8)	2.70	7.16	2-2	3p 1P° - 6d 1D							
2765.220	A	(6)	2.70	7.16	1-2	(8)							

Mg II

I P 14.97 Anal A List C May 1947

REFERENCE

A A. Fowler, *Report on Series in Line Spectra*, p. 118 (Fleetway Press, London, 1922). W L, I, T

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2795. 5231	A	50	0. 00	4. 41	$\frac{1}{2}-1\frac{1}{2}$	$3s\ ^2S - 3p\ ^2P^o$	2660. 821	A	10	8. 83	13. 46	$2\frac{1}{2}-$	$3d\ ^1D - 6f\ ^1F^o$
2802. 698	A	50	0. 00	4. 40	$\frac{1}{2}-\frac{1}{2}$	(1)	2660. 755	A		8. 83	13. 46	$1\frac{1}{2}-$	(4)
							2449. 573	A	6	8. 83	13. 86		$3d\ ^1D - 7f\ ^1F^o$
													(5)
2936. 496	A	35	4. 41	8. 62	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^o - 4s\ ^2S$							
2928. 625	A	35	4. 40	8. 62	$\frac{1}{2}-\frac{1}{2}$	(2)							
2797. 989	A	40	4. 41	8. 83	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^o - 3d\ ^1D$	2971. 70	A	1	9. 96	14. 11	$1\frac{1}{2}-\frac{1}{2}$	$4p\ ^1P^o - 9s\ ^2S$
2790. 768	A	40	4. 40	8. 83	$\frac{1}{2}-1\frac{1}{2}$	(3)	2969. 02	A	0	9. 95	14. 11	$\frac{1}{2}-\frac{1}{2}$	(6)
							2967. 87	A	1	9. 96	14. 11	$1\frac{1}{2}-\frac{1}{2}$	$4p\ ^1P^o - 8d\ ^1D$
							2965. 19	A	0	9. 95	14. 11	$\frac{1}{2}-\frac{1}{2}$	(7)

Mg III

I P 79.79 Anal B List D July 1947

REFERENCE

A J. Söderqvist, *Nova Acta Reg. Soc. Sci. Uppsala* [IV] 9, No. 7, 27 (1934). W L, I, T

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
234. 258	A	12	0. 00	52. 70	0-1	$2p^6\ ^1S - 3s\ [1\frac{1}{2}]^o$	2396. 04	A	3d	52. 55	57. 70	2-1	$3s\ [1\frac{1}{2}]^o - 3p\ [1\frac{1}{2}]$
						(1)	2468. 50	A	3	52. 70	57. 70	1-1	(5)
231. 730	A	14	0. 00	53. 27	0-1	$2p^6\ ^1S - 3s'\ [1\frac{1}{2}]^o$	2065. 54	A	5d	52. 55	58. 52	2-3	$3s\ [1\frac{1}{2}]^o - 3p\ [2\frac{1}{2}]$
						(2)	2092. 64	A	4d	52. 70	58. 60	1-2	(6)
187. 194	A	8	0. 00	65. 95	0-1	$2p^6\ ^1S - 3d\ [1\frac{1}{2}]^o$	2040. 23	A	3d	52. 55	58. 60	2-2	
						(3)							
186. 510	A	9	0. 00	66. 19	0-1	$2p^6\ ^1S - 3d'\ [1\frac{1}{2}]^o$	2529. 97	A	2	52. 82	57. 70	0-1	$3s'\ [1\frac{1}{2}]^o - 3p\ [1\frac{1}{2}]$
						(4)							(7)

ALUMINUM

Al I

I P 5.96 Anal A List C Aug. 1947

REFERENCES

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(Fleetway Press, London, 1922). W L, I, T
B F. Paschen, *Ann. der Phys.* [5] 12, 522 (1932). W L, I, T

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Al I

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air							Air						
2660.393	A	10R	0.01	4.65	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^{\circ}-5s\ ^1S$	2174.028	A	1R	0.01	5.69	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^{\circ}-8d\ ^1D$
2652.484	A	10R	0.00	4.65	$\frac{1}{2}-\frac{1}{2}$	(1)	2168.805	A	1R	0.00	5.69	$\frac{1}{2}-1\frac{1}{2}$	(9)
2575.113	A	10R	0.01	4.81	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^{\circ}-4d\ ^1D$							
2567.997	A	10R	0.00	4.81	$\frac{1}{2}-1\frac{1}{2}$	(2)	2180.96	B	8	3.13	8.79	$\frac{1}{2}-1\frac{1}{2}?$	$4s\ ^1S-3d\ ^1P^{\circ}$
2575.411	A	3R	0.01	4.81	$1\frac{1}{2}-1\frac{1}{2}$		2177.35	B	6	3.13	8.80	$\frac{1}{2}-\frac{1}{2}?$	(10)
2378.408	A	3	0.01	5.20	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^{\circ}-6s\ ^1S$							
2372.084	A	3	0.00	5.20	$\frac{1}{2}-\frac{1}{2}$	(3)	2372.115	B	10	3.60	8.80	$2\frac{1}{2}-3\frac{1}{2}$	$3p\ ^1P-3d\ ^1D^{\circ}$
2373.132	A	8R	0.01	5.21	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^{\circ}-5d\ ^1D$	2369.289	B	8	3.59	8.80	$1\frac{1}{2}-2\frac{1}{2}$	(11)
2367.064	A	8R	0.01	5.21	$\frac{1}{2}-1\frac{1}{2}$	(4)	2367.596	B	5	3.58	8.80	$\frac{1}{2}-1\frac{1}{2}$	
2373.360	A	2R	0.01	5.21	$1\frac{1}{2}-1\frac{1}{2}$		2373.549	B	6	3.60	8.80	$2\frac{1}{2}-2\frac{1}{2}$	
2269.093	A	4R	0.01	5.45	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^{\circ}-6d\ ^1D$	2370.208	B	6	3.59	8.80	$1\frac{1}{2}-1\frac{1}{2}$	
2263.453	A	4R	0.00	5.45	$\frac{1}{2}-1\frac{1}{2}$	(5)	2368.090	B	5	3.58	8.79	$\frac{1}{2}-\frac{1}{2}$	
2269.212	A	2R	0.01	5.45	$1\frac{1}{2}-1\frac{1}{2}$		2321.570	B	8	3.60	8.91	$2\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P-3d\ ^1P^{\circ}$
2263.731	A	2	0.01	5.47	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^{\circ}-7s\ ^1S$	2314.992	B	1	3.59	8.92	$1\frac{1}{2}-1\frac{1}{2}$	(12)
2257.999	A	2	0.00	5.47	$\frac{1}{2}-\frac{1}{2}$	(6)	2311.031	B	1	3.58	8.92	$\frac{1}{2}-\frac{1}{2}$	
2210.046	A	2R	0.01	5.60	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^{\circ}-7d\ ^1D$	2319.069	B	4	3.60	8.92	$2\frac{1}{2}-1\frac{1}{2}$	
*2204.627	A	2R	0.00	5.60	$\frac{1}{2}-1\frac{1}{2}$	(7)	2313.527	B	4	3.59	8.92	$1\frac{1}{2}-\frac{1}{2}$	
							2317.487	B	5	3.59	8.91	$1\frac{1}{2}-2\frac{1}{2}$	
*2204.627	A	2R	0.01	5.61	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^{\circ}-8s\ ^1S$	2312.491	B	2	3.58	8.92	$\frac{1}{2}-1\frac{1}{2}$	
2199.64	A	1	0.00	5.61	$\frac{1}{2}-\frac{1}{2}$	(8)	2837.95	B	12	4.00	8.35	$2\frac{1}{2}-2\frac{1}{2}$	$3d\ ^1D-3d\ ^1D^{\circ}$
							2840.11	B	10	4.00	8.35	$1\frac{1}{2}-1\frac{1}{2}$	(13)

Al II

I P 18.75 Anal A List C July 1947

REFERENCES

- A R. A. Sawyer and F. Paschen, *Ann. der Phys.* [4] 84, 1 (1927). W L, I, T
B F. Paschen and R. Ritschl, *Ann. der Phys.* [5] 18, 885 (1933). W L, T
C R. V. Zumstein, *Phys. Rev.* 38, 2214 (1931). W L

Al II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2669. 166	A	10	0. 00	4. 62	0-1	3s ² 1S - 3p ² 1P ^o (1)	Vac 1625. 60	A	3	7. 39	14. 98	1-0	3p ² 1P ^o - 5s ² 1S (9)
Vac 1670. 81†	A	15	0. 00	7. 39	0-1	3s ² 1S - 3p ² 1P ^o (2)	1539. 74	A	10	7. 39	15. 41	1-2	3p ² 1P ^o - 4d ² 1D (10)
Air 2087. 0	A	5	4. 64	10. 55	2-2	3p ² 1P ^o - 3p ² 1D (3)	Air 2631. 553	A	7	10. 55	15. 24	2-3	3p ² 1D - 4f ² 1F ^o (11)
2081. 5	A	2	4. 62	10. 55	1-2								
Vac 1862. 34	C	10	4. 64	11. 27	2-1	3p ² 1P ^o - 4s ² 1S (4)	2475. 260	A	4	10. 55	15. 54	2-1	3p ² 1D - 5p ² 1P ^o (12)
1858. 05	C	7	4. 62	11. 27	1-1								
1855. 95	C	3	4. 62	11. 27	0-1								
1763. 95	A	10	4. 64	11. 64	2-2	3p ² 1P ^o - 3p ² 1P [†] (5)	2902. 14	B	2	11. 27	15. 52	1-2	4s ² 1S - 5p ² 1P ^o (13)
1763. 79	A	8	4. 62	11. 62	1-1		2903. 22	B	1	11. 27	15. 52	1-1	
1767. 60	A	10	4. 64	11. 62	2-1		2903. 718	B	0. 5	11. 27	15. 52	1-0	
1724. 981	C	15	4. 64	11. 80	2-1	3p ² 1P ^o - 3d ² 1D (6)	2637. 696	A	5	11. 80	16. 47	3-4	3d ² 1D - 5f ² 1F ^o (14)
1721. 279	C	10	4. 62	11. 80	1-1		2638. 263	A	4	11. 80	16. 47	2-3	
1719. 459	C	8	4. 62	11. 80	0-1		2638. 695	A	3	11. 80	16. 47	1-2	
							2638. 182	A	0. 5	11. 80	16. 47	3-3	
							2638. 625	A	0. 5	11. 80	16. 47	2-2	
							2638. 547	A	0	11. 80	16. 47	3-2	
Air 2816. 189	B	20	7. 39	11. 77	1-0	3p ² 1P ^o - 4s ² 1S (7)	2532. 655	A	2	11. 80	16. 67	3-2	3d ² 1D - 6p ² 1P ^o (15)
Vac 1989. 85	A	2	7. 39	13. 59	1-2	3p ² 1P ^o - 3d ² 1D (8)	2533. 16	A	1	11. 80	16. 67	2-1	
							2533. 41	A	0. 5	11. 80	16. 67	1-0	

Al III

I P 28.33 Anal A List D May 1947

REFERENCES

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 B E. Ekefors, Zeit. Phys. **51**, 471 (1928). W L, I
 F. Paschen, Ann. der Phys. [4] **71**, 142 (1923). T

Al III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1854. 722	A	10	0. 00	6. 66	½-1½	3s ² 1S - 3p ² 1P ^o (1)
1862. 782	A	10	0. 00	6. 63	½- ½	
695. 817	B	5	0. 00	17. 74	½-1½	3s ² 1S - 4p ² 1P ^o (2)
696. 212	B	4	0. 00	17. 73	½- ½	
560. 390	B	7	0. 00	22. 03	½-	3s ² 1S - 5p ² 1P ^o (3)

SILICON

Si I

I P 8.11 Anal A List A Oct. 1947

REFERENCES

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Si I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2516.109†	B	250r	0.03	4.93	2-2	$3p^2 \ ^1P - 4s \ ^1P^\circ$ (1)	1850.68	A	50r	0.03	6.70	2-3	$3p^2 \ ^1P - 4d \ ^1D^\circ$ (10)
2519.203	B	100r	0.01	4.91	1-1		1847.47	A	35r	0.01	6.69	1-2	
2528.510	B	175r	0.03	4.91	2-1		1845.53	A	25r	0.00	6.69	0-1	
2524.108	B	125r	0.01	4.90	1-0		1852.48	A	25r	0.03	6.69	2-2	
2506.896	B	150r	0.01	4.93	1-2		1848.16	A	20r	0.01	6.69	1-1	
2514.315	B	100r	0.00	4.91	0-1		1853.17	A	10	0.03	6.69	2-1	
2452.12	A	20	0.03	5.06	2-1	$3p^2 \ ^1P - 4s \ ^1P^\circ$ (2)	1841.47	A	20r	0.03	6.73	2-2	$3p^2 \ ^1P - 5s \ ^1P^\circ$ (11)
2443.37	A	20	0.01	5.06	1-1		1843.77	A	15	0.01	6.71	1-1	
2438.77	A	25	0.00	5.06	0-1		1848.75	A	18	0.03	6.71	2-1	
							1846.13	A	12	0.01	6.70	1-0	
2216.670	A	150r	0.03	5.59	2-3	$3p^2 \ ^1P - 3d \ ^1D^\circ$ (3)	1836.52	A	20	0.01	6.73	1-2	$3p^2 \ ^1P - 5s \ ^1P^\circ$ (12)
2210.880	A	100r	0.01	5.59	1-2		1841.16	A	10	0.00	6.71	0-1	
2207.972	A	75r	0.00	5.59	0-1								
2218.052	A	50r	0.03	5.59	2-2		1829.89	A	7	0.03	6.77	2-1	
2211.737	A	75r	0.01	5.59	1-1		1825.04	A	1	0.01	6.77	1-1	$3p^2 \ ^1P - 4d \ ^1D^\circ$ (13)
2218.914	A	25r	0.03	5.59	2-1		1822.46	A	10	0.00	6.77	0-1	
2121.22	A	7	0.03	5.85	2-2	$3p^2 \ ^1P - 3d \ ^1D^\circ$ (4)	1776.85	A	10	0.03	6.98	2-2	$3p^2 \ ^1P - 4d \ ^1D^\circ$ (14)
2114.59	A	4b	0.01	5.85	1-2		1772.24	A	1	0.01	6.98	1-2	
2054.81	A	8	0.03	6.03	2-3	$3p^2 \ ^1P - 3p^1 \ ^1D^\circ$ (5)	1770.94	A	10	0.03	7.00	2-2	$3p^2 \ ^1P - 4d \ ^1P^\circ$ (15)
2061.18	A	8	0.01	6.00	1-2		*1776.03	A	6	0.01	7.00	1-1	
2065.49	A	5	0.00	5.97	0-1		1770.63	A	8	0.03	7.00	2-1	
2067.40	A	1	0.03	6.00	2-2		1765.02	A	5	0.01	7.00	1-0	
							1766.34	A	5	0.01	7.00	1-2	
2010.97	A	8	0.03	6.16	2-3	$3p^2 \ ^1P - 3d \ ^1F^\circ$ (6)	1763.67	A	4	0.00	7.00	0-1	$3p^2 \ ^1P - 4d \ ^1F^\circ$ (16)
2008.43	A	3	0.01	6.15	1-2		1747.36	A	4	0.03	7.09	2-3	
							1745.35	A	2	0.01	7.08	1-2	
Vac							1749.74	A	0	0.03	7.08	2-2	$3p^2 \ ^1P - 4d \ ^1P^\circ$ (17)
1988.36	A	30	0.03	6.23	2-2	$3p^2 \ ^1P - 3d \ ^1P^\circ$ (7)							
1980.00	A	10	0.01	6.24	1-1		1707.09	A	0	0.03	7.26	2-1	
1985.73	A	20	0.03	6.24	2-1		1702.81	A	5	0.01	7.26	1-1	
1978.57	A	12	0.01	6.25	1-0		1700.60	A	4	0.00	7.26	0-1	
1982.60	A	20	0.01	6.23	1-2								$3p^2 \ ^1P - 5d \ ^1D^\circ$ (18)
1976.96	A	15	0.00	6.24	0-1		1704.44	A	7r	0.03	7.27	2-3	
1881.86	A	12	0.03	6.59	2-3	$3p^2 \ ^1P - 3d \ ^1F^\circ$ (8)	1697.96	A	20r	0.03	7.30	2-3	
							1696.20	A	20r	0.01	7.29	1-2	
1880.86	A	5	0.03	6.59	2-1	$3p^2 \ ^1P - 3d \ ^1P^\circ$ (9)	1693.30	A	7r	0.00	7.29	0-1	
1875.82	A	10	0.01	6.59	1-1		1700.43	A	15r	0.03	7.29	2-2	
1873.11	A	8	0.00	6.59	0-1		1695.50	A	5r	0.01	7.29	1-1	
							1699.70	A	1	0.03	7.29	2-1	

Si I—Continued

Si I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1698.18	A	4b	0.03	7.30	2—	$3p^2\ ^1P - 1^\circ$ (19)	Vac 1594.92	A	4r	0.03	7.77	2—2	$3p^2\ ^1P - 8s\ ^1P^\circ$ (34)
1697.55	A	3b	0.03	7.30	2—	$3p^2\ ^1P - 2^\circ$ (20)	1597.83	A	2	0.03	7.75	2—1	
1686.83	A	4	0.03	7.35	2—2	$3p^2\ ^1P - 6s\ ^1P^\circ$ (21)	1595.50	A	1	0.01	7.75	1—0	
1689.28	A	3	0.01	7.32	1—1		1591.17	A	0	0.01	7.77	1—2	
1693.47	A	5	0.03	7.32	2—1		1592.15	A	3r	0.00	7.75	0—1	
1690.77	A	3	0.01	7.31	1—0		1597.99	A	3	0.03	7.75	2—3	$3p^2\ ^1P - 6d\ ^1F^\circ$ (35)
1682.67	A	3	0.01	7.35	1—2		1594.53	A	5r	0.03	7.77	2—3	$3p^2\ ^1P - 7d\ ^1D^\circ$ (36)
1687.06	A	1	0.00	7.32	0—1		1592.35	A	3r	0.01	7.76	1—2	
1676.80	A	1	0.00	7.36	0—1	$3p^2\ ^1P - 6s\ ^1P^\circ$ (22)	1590.49	A	2r	0.00	7.76	0—1	
1675.23	A	4r	0.03	7.40	2—2	$3p^2\ ^1P - 5d\ ^1P^\circ$ (23)	1595.82	A	1	0.03	7.76	2—2	
1668.52	A	3	0.01	7.41	1—1		1592.45	A	1	0.01	7.76	1—1	
1672.60	A	3	0.03	7.41	2—1		1589.60	A	1	0.03	7.79	2—1	$3p^2\ ^1P - 8s\ ^1P^\circ$ (37)
1667.63	A	3	0.01	7.41	1—0		1586.00	A	1	0.01	7.79	1—1	
1671.11	A	2	0.01	7.40	1—2		*1583.97	A	0	0.00	7.79	0—1	
1666.36	A	2	0.00	7.41	0—1		*1583.97	A	0	0.03	7.82	2—3	$3p^2\ ^1P - 7d\ ^1F^\circ$ (38)
1664.54	A	2	0.03	7.44	2—2	$3p^2\ ^1P - 5d\ ^1D^\circ$ (24)	1576.76	A	1	0.03	7.86	2—3	$3p^2\ ^1P - 7d\ ^1F^\circ$ (39)
1660.47	A	0	0.01	7.44	1—2		1573.85	A	1r	0.03	7.87	2—3	$3p^2\ ^1P - 8d\ ^1D^\circ$ (40)
1653.36	A	1	0.03	7.49	2—3	$3p^2\ ^1P - 5d\ ^1F^\circ$ (25)	1565.30	A	1	0.00	7.89	0—1	$3p^2\ ^1P - 9s\ ^1P^\circ$ (41)
1651.05	A	0	0.01	7.49	1—2								
1633.15	A	2r	0.01	7.57	1—1	$3p^2\ ^1P - 5d\ ^1P^\circ$ (26)							
1631.11	A	4r	0.00	7.57	0—1								
1629.96	A	8r	0.03	7.60	2—3	$3p^2\ ^1P - 6d\ ^1D^\circ$ (27)	Air 2970.35	A	15	0.78	4.93	2—2	$3p^2\ ^1D - 4s\ ^1P^\circ$ (42)
1630.15	A	7r	0.01	7.58	1—2		2987.65	A	25	0.78	4.91	2—1	
1625.71	A	5r	0.00	7.59	0—1		2881.595	A	200r	0.78	5.06	2—1	$3p^2\ ^1D - 4s\ ^1P^\circ$ (43)
1633.99	A	3	0.03	7.58	2—2		2563.67	A	4	0.78	5.59	2—2	$3p^2\ ^1D - 3d\ ^1D^\circ$ (44)
1627.70	A	2	0.01	7.59	1—1		2564.82	A	3	0.78	5.59	2—1	
1633.90	A	4	0.03	7.58	2—3	$3p^2\ ^1P - 5d\ ^1F^\circ$ (28)	2435.160	A	100r	0.78	5.85	2—2	$3p^2\ ^1D - 3d\ ^1D^\circ$ (45)
1623.34	A	0	0.03	7.63	2—2	$3p^2\ ^1P - 7s\ ^1P^\circ$ (29)	2291.03	A	7	0.78	6.16	2—3	$3p^2\ ^1D - 3d\ ^1F^\circ$ (46)
1625.58	A	1	0.01	7.60	1—1		2295.40	A	1	0.78	6.15	2—2	
1629.47	A	7r	0.03	7.60	2—1		2261.70	A	1	0.78	6.23	2—2	$3p^2\ ^1D - 3d\ ^1P^\circ$ (47)
1627.03	A	1	0.01	7.60	1—0		2124.111	A	100r	0.78	6.59	2—3	$3p^2\ ^1D - 3d\ ^1F^\circ$ (48)
1619.53	A	1	0.01	7.63	1—2		2122.99	A	10	0.78	6.59	2—1	$3p^2\ ^1D - 3d\ ^1P^\circ$ (49)
1622.87	A	4r	0.03	7.63	2—2	$3p^2\ ^1P - 6d\ ^1P^\circ$ (30)	2084.47	A	20	0.78	6.70	2—3	$3p^2\ ^1D - 4d\ ^1D^\circ$ (50)
1616.55	A	3	0.01	7.65	1—1								
1620.39	A	3	0.03	7.65	2—1								
1619.00	A	0	0.01	7.63	1—2								
1614.55	A	3	0.00	7.65	0—1								
1615.89	A	3	0.00	7.64	0—1	$3p^2\ ^1P - 7s\ ^1P^\circ$ (31)							
1614.60	A	1	0.03	7.67	2—2	$3p^2\ ^1P - 6d\ ^1D^\circ$ (32)							
1608.92	A	2	0.03	7.70	2—3	$3p^2\ ^1P - 6d\ ^1F^\circ$ (33)							
1605.87	A	1	0.01	7.70	1—2								

Si I—Continued

Si I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
^{An} 2082. 01	A	15	0. 78	6. 71	2-1	3p ² 1D - 5s 1P° (51)	^{Vac} *1766. 03 1769. 60	A A	6 1	0. 78 0. 78	7. 77 7. 75	2-2 2-1	3p ² 1D - 8s 1P° (74)
2058. 13	A	50	0. 78	6. 77	2-1	3p ² 1D - 5s 1P° (52)	1769. 78	A	15	0. 78	7. 75	2-3	3p ² 1D - 6d 1F° (75)
^{Vac} 1991. 23	A	5	0. 78	6. 98	2-2	3p ² 1D - 4d 1D° (53)	1765. 61	A	5b	0. 78	7. 77	2-3	3p ² 1D - 7d 1D° (76)
1983. 82	A	3	0. 78	7. 00	2-2	3p ² 1D - 4d 1P° (54)	1759. 56	A	3	0. 78	7. 79	2-1	3p ² 1D - 8s 1P° (77)
1954. 96	A	6	0. 78	7. 09	2-3	3p ² 1D - 4d 1F° (55)	1752. 68	A	0	0. 78	7. 82	2-3	3p ² 1D - 7d 1F° (78)
1957. 96	A	0	0. 78	7. 08	2-2	3p ² 1D - 4d 1P° (56)	1743. 88	A	5b	0. 78	7. 86	2-3	3p ² 1D - 7d 1F° (79)
1904. 66	A	12	0. 78	7. 26	2-1	3p ² 1D - 4d 1P° (56)	1740. 34	A	3h	0. 78	7. 87	2-3	3p ² 1D - 8d 1D° (80)
1901. 34	A	50	0. 78	7. 27	2-3	3p ² 1D - 4d 1F° (57)	1736. 50	A	1	0. 78	7. 89	2-1	3p ² 1D - 9s 1P° (81)
1893. 22	A	25	0. 78	7. 30	2-3	3p ² 1D - 5d 1D° (58)	^{Air} 2342. 35	A	3	1. 90	6. 24	0-1	3p ² 1S - 3d 1P° (82)
1895. 41	A	2	0. 78	7. 29	2-1	3p ² 1D - 5d 1D° (58)	2631. 28	A	50r	1. 90	6. 59	0-1	3p ² 1S - 3d 1P° (83)
1893. 54	A	4	0. 78	7. 30	2-	3p ² 1D - 1° (59)	2577. 13	A	10	1. 90	6. 69	0-1	3p ² 1S - 4d 1D° (84)
1892. 70	A	3	0. 78	7. 30	2-	3p ² 1D - 2° (60)	2568. 63	A	15	1. 90	6. 71	0-1	3p ² 1S - 5s 1P° (85)
1887. 71	A	12	0. 78	7. 32	2-1	3p ² 1D - 6s 1P° (61)	2532. 38	A	20	1. 90	6. 77	0-1	3p ² 1S - 5s 1P° (86)
1874. 86	A	25	0. 78	7. 36	2-1	3p ² 1D - 6s 1P° (62)	2303. 03	A	20	1. 90	7. 26	0-1	3p ² 1S - 4d 1P° (87)
1865. 04	A	2	0. 78	7. 40	2-2	3p ² 1D - 5d 1P° (63)	2289. 61	A	10	1. 90	7. 29	0-1	3p ² 1S - 5d 1D° (88)
1861. 80	A	1	0. 78	7. 41	2-1	3p ² 1D - 5d 1P° (63)	2278. 30	A	7	1. 90	7. 32	0-1	3p ² 1S - 6s 1P° (89)
1851. 80	A	10	0. 78	7. 44	2-2	3p ² 1D - 5d 1D° (64)	2259. 58	A	7	1. 90	7. 36	0-1	3p ² 1S - 6s 1P° (90)
1838. 00	A	10	0. 78	7. 49	2-3	3p ² 1D - 5d 1F° (65)	2177. 30	A	8b	1. 90	7. 57	0-1	3p ² 1S - 5d 1P° (91)
1840. 00	A	2	0. 78	7. 49	2-2	3p ² 1D - 5d 1P° (66)	2167. 74	A	7	1. 90	7. 59	0-1	3p ² 1S - 6d 1D° (92)
1817. 87	A	2b	0. 78	7. 57	2-1	3p ² 1D - 5d 1P° (66)	2163. 78	A	10b	1. 90	7. 60	0-1	3p ² 1S - 7s 1P° (93)
1809. 05	A	30	0. 78	7. 60	2-3	3p ² 1D - 6d 1D° (67)	2147. 91	A	3	1. 90	7. 65	0-1	3p ² 1S - 6d 1P° (94)
1814. 09	A	30	0. 78	7. 58	2-2	3p ² 1D - 6d 1P° (67)	2150. 43	A	5	1. 90	7. 64	0-1	3p ² 1S - 7s 1P° (95)
1814. 02	A	50	0. 78	7. 58	2-3	3p ² 1D - 5d 1F° (68)	2094. 20	A	2	1. 90	7. 79	0-1	3p ² 1S - 8s 1P° (96)
1808. 48	A	4b	0. 78	7. 60	2-1	3p ² 1D - 7s 1P° (69)							
1797. 33	A	3	0. 78	7. 65	2-1	3p ² 1D - 6d 1P° (70)							
1799. 14	A	10	0. 78	7. 64	2-1	3p ² 1D - 7s 1P° (71)							
1790. 28	A	4	0. 78	7. 67	2-2	3p ² 1D - 6d 1D° (72)							
1783. 23	A	8	0. 78	7. 70	2-3	3p ² 1D - 6d 1F° (73)							
1784. 11	A	1	0. 78	7. 70	2-2	3p ² 1D - 6d 1F° (73)							

Si II

I P 16.27 Anal B List A Sept. 1948

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Si II

Si II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1816.941	B	8	0.04	6.83	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^\circ-3p\ ^1D$	1711.0	C	6d?	6.83	14.04		$3p\ ^1D-5f\ ^1F^\circ$
1808.01	B	7	0.00	6.83	$\frac{1}{2}-1\frac{1}{2}$	(1)							(10)
1817.42	B	2	0.04	6.83	$1\frac{1}{2}-1\frac{1}{2}$		1563.1	C	3d?	6.83	14.73		$3p\ ^1D-6f\ ^1F^\circ$
1533.44	B	5	0.04	8.09	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^\circ-4s\ ^1S$							(11)
1526.70	B	4	0.00	8.09	$\frac{1}{2}-\frac{1}{2}$	(2)	1485.4	C	3	6.83	15.14		$3p\ ^1D-7f\ ^1F^\circ$
1309.28	A	2	0.04	9.46	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^\circ-3p\ ^1S$							(12)
1304.41	A	1	0.00	9.46	$\frac{1}{2}-\frac{1}{2}$	(3)	1438.9	C	1	6.83	15.41		$3p\ ^1D-8f\ ^1F^\circ$
1265.04	C	10	0.04	9.80	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^\circ-3d\ ^1D$							(13)
1260.66	C	8	0.00	9.79	$\frac{1}{2}-1\frac{1}{2}$	(4)	1408.8	C	0	6.83	15.59		$3p\ ^1D-9f\ ^1F^\circ$
1194.50	D	5	0.04	10.37	$1\frac{1}{2}-1\frac{1}{2}$	$3p\ ^1P^\circ-3p\ ^1P$							(14)
1193.31	D	3	0.00	10.35	$\frac{1}{2}-\frac{1}{2}$	(5)	Air						
1197.42	D	3	0.04	10.35	$1\frac{1}{2}-\frac{1}{2}$		2604.44	C	2	8.09	12.82	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^1S-5p\ ^1P^\circ$
1190.42	D	4	0.00	10.37	$\frac{1}{2}-1\frac{1}{2}$		2606.09	C	1	8.09	12.82	$\frac{1}{2}-\frac{1}{2}$	(15)
993.09	C	1	0.04	12.47	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^\circ-4d\ ^1D$	2058.532	C	1	8.09	14.08	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^1S-6p\ ^1P^\circ$
990.32	C	0	0.00	12.47	$\frac{1}{2}-1\frac{1}{2}$	(6)	2058.917	C	0	8.09	14.08	$\frac{1}{2}-\frac{1}{2}$	(16)
1350.07	E	4	(5.48	14.62)	$2\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P-4s\ ^1P^\circ$							
1350.58	E	3	(5.46	14.60)	$1\frac{1}{2}-1\frac{1}{2}$	(7)	2905.70	C	3	9.80	14.04	$2\frac{1}{2}-$	$3d\ ^1D-5f\ ^1F^\circ$
1353.75	E	3	(5.48	14.60)	$2\frac{1}{2}-1\frac{1}{2}$		2904.29	C	2	9.79	14.04	$1\frac{1}{2}-2\frac{1}{2}$	(17)
1352.68	E	3	(5.46	14.58)	$1\frac{1}{2}-\frac{1}{2}$		2501.99	C	1	9.80	14.73	$2\frac{1}{2}-$	$3d\ ^1D-6f\ ^1F^\circ$
1346.92	E	3	(5.46	14.62)	$1\frac{1}{2}-2\frac{1}{2}$		2500.96	C	1	9.79	14.73	$1\frac{1}{2}-2\frac{1}{2}$	(18)
1348.55	E	3	(5.44	14.60)	$\frac{1}{2}-1\frac{1}{2}$								
1251.16	E	4	(5.48	15.34)	$2\frac{1}{2}-1\frac{1}{2}$	$3p\ ^1P-3p\ ^1S^\circ$							
1248.40	E	3	(5.46	15.34)	$1\frac{1}{2}-1\frac{1}{2}$	(8)	2726.74	C	2	10.03	14.56	$1\frac{1}{2}-\frac{1}{2}$	$4p\ ^1P^\circ-7s\ ^1S$
1246.73	E	3	(5.44	15.34)	$\frac{1}{2}-1\frac{1}{2}$		2722.29	C	1	10.02	14.56	$\frac{1}{2}-\frac{1}{2}$	(19)
Air							2682.27	C	2	10.03	14.63	$1\frac{1}{2}-$	$4p\ ^1P^\circ-6d\ ^1D$
2072.61	C	10	6.83	12.78	$2\frac{1}{2}-$	$3p\ ^1D-4f\ ^1F^\circ$	2677.98	C	1	10.02	14.63	$\frac{1}{2}-1\frac{1}{2}$	(20)
2071.94	C	8	6.83	12.78	$1\frac{1}{2}-2\frac{1}{2}$	(9)							

Si III

I P 33.32 Anal B List D July 1947

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Si III

Si III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1895.46	A	2	0.00	6.51	0-1	$3s^2\ ^1S - 3p\ ^1P^o$ (1)	Vac 997.40 994.82 993.54	A A A	5 5 5	6.55 6.51 6.50	18.92 18.92 18.92	2-1 1-1 0-1	$3p\ ^1P^o - 4s\ ^1S$ (6)
1206.52	A	10	0.00	10.23	0-1	$3s^2\ ^1S - 3p\ ^1P^o$ (2)	Air 2559.22	B	7	10.23	15.05	1-2	$3p\ ^1P^o - 3p^2\ ^1D$ (7)
566.54	A	3	0.00	21.79	0-1	$3s^2\ ^1S - 4p\ ^1P^o$ (3)							
*1298.90	A	8	6.55	16.05	2-2	$3p\ ^1P^o - 3p^2\ ^1P$ (4)	2541.83	B	10	10.23	15.09	1-2	$3p\ ^1P^o - 3d\ ^1D$ (8)
1303.30	A	7	6.51	16.02	1-1	$3p\ ^1P^o - 3d\ ^1D$ (5)	Vac 1417.20	A	5	10.23	18.94	1-0	$3p\ ^1P^o - 3p^2\ ^1S$ (9)
1301.12	A	7	6.55	16.02	2-1		1312.61	A	4	10.23	19.64	1-0	$3p\ ^1P^o - 4s\ ^1S$ (10)
1294.55	A	7	6.51	16.00	1-0								
1296.72	A	7	6.51	16.05	1-2								
	A	7	6.50	16.02	0-1								
1113.20	A	9	6.55	17.63	2-	$3p\ ^1P^o - 3d\ ^1D$ (5)							
1109.95	A	8	6.51	17.63	1-								
1108.35	A	7	6.50	17.64	0-1								

Si IV

I P 44.95 Anal B List D Sept. 1948

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Si IV

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1393.73 1402.73	A A	10 8	0.00 0.00	8.86 8.80	$\frac{1}{2} - 1\frac{1}{2}$ $\frac{1}{2} - \frac{1}{2}$	$3s\ ^2S - 3p\ ^2P^o$ (1)
457.7	B	(3)	0.00	26.97	$\frac{1}{2} -$	$3s\ ^2S - 4p\ ^2P^o$ (2)
1128.326 1122.495	A A	5 4	8.86 8.80	19.80 19.80	$1\frac{1}{2} - 2\frac{1}{2}$ $\frac{1}{2} - 1\frac{1}{2}$	$3p\ ^2P^o - 3d\ ^2D$ (3)
818.121 815.060	A A	4 3	8.86 8.80	23.95 23.95	$1\frac{1}{2} - \frac{1}{2}$ $\frac{1}{2} - \frac{1}{2}$	$3p\ ^2P^o - 4s\ ^2S$ (4)

PHOSPHORUS

P I

I P 10.9 Anal B List C Nov. 1947

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P I

P I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1774. 942†	A	(12)	0. 00	6. 96	1½-2½	3p³ ¹S°-4s ¹P	1685. 957	A	(11)	1. 40	8. 73	2½-3½	3p³ ¹D°-3d ²F†
1782. 830	A	(12)	0. 00	6. 92	1½-1½	(1)	1694. 055	A	(10)	1. 40	8. 69	1½-2½	(6)
1787. 686	A	(12)	0. 00	6. 91	1½- ½								
1679. 730	A	(12)	0. 00	7. 35	1½-2½	3p³ ¹S°-3p¹ ¹P							
1674. 661	A	(12)	0. 00	7. 37	1½-1½	(2)							
1671. 720	A	(6)	0. 00	7. 38	1½- ½								
Air							Air						
2223. 35	B	3	1. 40	6. 96	2½-2½	3p³ ¹D°-4s ¹P	2677. 12	B	5	2. 31	6. 92	1½-1½	3p³ ¹P°-4s ¹P†
2234. 99	B	3	1. 40	6. 92	1½-1½	(3)	2688. 02	B	2	2. 31	6. 91	1½- ½	(7)
2235. 77	B	5	1. 40	6. 92	2½-1½		2535. 65	B	50	2. 31	7. 18	1½-1½	3p³ ¹P°-4s ¹P
2222. 59	B	0	1. 40	6. 96	1½-2½		2553. 28	B	40	2. 31	7. 14	½- ½	(8)
							2554. 93	B	30	2. 31	7. 14	1½- ½	
							2534. 01	B	25	2. 31	7. 18	½-1½	
2136. 199	A	(11)	1. 40	7. 18	2½-1½	3p³ ¹D°-4s ¹P	2154. 081	A	(12)	2. 31	8. 04	1½-	3p³ ¹P°-4s' ¹D
2149. 108	A	(12)	1. 40	7. 14	1½- ½	(4)	2152. 950	A	(11)	2. 31	8. 04	½-	(9)
2135. 466	A	(10)	1. 40	7. 18	1½-1½								
Vac							2033. 489	A	(10)	2. 31	8. 38	1½-1½	3p³ ¹P°-3p¹ ¹P
1859. 401	A	(12)	1. 40	8. 04	2½-	3p³ ¹D°-4s' ¹D	2023. 472	A	(6)	2. 31	8. 41	½- ½	(10)
1858. 924	A	(12)	1. 40	8. 04	1½-	(5)	2024. 546	A	(6)	2. 31	8. 41	1½- ½	
							2032. 447	A	(8)	2. 31	8. 38	½-1½	

P II

I P 19.57 Anal B List C Oct. 1947

REFERENCES

- A H. A. Robinson, Phys. Rev. **49**, 297 (1936). W L, I, T
 B I. S. Bowen, Phys. Rev. **29**, 510 (1927). W L, (I), T

P II

P II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1542.321†	A	15	0.06	8.06	2-3	$3p^2 \ ^1P-3p^2 \ ^1D^{\circ}$ (1)	2606.01	B	(3)	8.06	12.80	3-3	$3p^2 \ ^1D^{\circ}-4p \ ^1D$ (4)
1535.955	A	12	0.02	8.06	1-2		2626.16	B	(4)	8.06	12.76	2-2	
1532.558	A	12	0.00	8.06	0-1		2636.78	B	(3)	8.06	12.74	1-1	
1543.144	A	12	0.06	8.06	2-2		2628.55	B	(2)	8.06	12.76	3-2	
1536.459	A	12	0.02	8.06	1-1		2638.18	B	(2)	8.06	12.74	2-1	
1543.638	A	2	0.06	8.06	2-1		2603.71	B	(2)	8.06	12.80	2-3	
							2624.76	B	(3)	8.06	12.76	1-2	
1310.685	A	10	0.06	9.48	2-2	$3p^2 \ ^1P-3p^2 \ ^1P^{\circ}$ (2)							$3p^2 \ ^1D^{\circ}-4p \ ^1P$ (5)
1304.688	A	10	0.02	9.48	1-1		2484.152	A	8	8.06	13.03	3-2	
1309.877	A	10	0.06	9.48	2-1		2497.328	A	8	8.06	13.00	2-1	
1304.484	A	10	0.02	9.48	1-0		2500.922	A	7	8.06	12.99	1-0	
1305.531	A	10	0.02	9.48	1-2		2481.984	A	3	8.06	13.03	2-2	
1301.878	A	10	0.00	9.48	0-1		2496.003	A	7	8.06	13.00	1-1	
							2480.704	A	0	8.06	13.03	1-2	
1153.997	A	10	0.06	10.76	2-2	$3p^2 \ ^1P-4s \ ^1P^{\circ}$ (3)							$4s \ ^1P^{\circ}-5$ (6)
1155.020	A	10	0.02	10.71	1-1								
1159.085	A	10	0.06	10.71	2-1								
1156.968	A	10	0.02	10.69	1-0		2281.003	A	10	10.76	16.17	2-	
1149.960	A	10	0.02	10.76	1-2								
1152.803	A	10	0.00	10.71	0-1								
							2285.114	A	10	10.97	16.37	1-	$4s \ ^1P^{\circ}-19$ (7)

P III

I P 30.03 Anal A List D April 1949

REFERENCES

- A H. A. Robinson, Phys. Rev. **51**, 728 (1937). W L, I, T
 I. S. Bowen, Phys. Rev. **39**, 13 (1932). T

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S I

I P 10.31 Anal A List B Dec. 1947

REFERENCES

- A J. E. Ruedy, Phys. Rev. **44**, 757 (1933). W L, I, T
 B. Edlén, Phys. Rev. **62**, 434 (1942); and unpublished material (Nov. 1946). T

S I

S I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1900. 27	A	20R	0. 00	6. 50	2-2	$3p^4 \text{ } ^1P-4s \text{ } ^1S^\circ$	1316. 59	A	8R	0. 00	9. 38	2-3	$3p^4 \text{ } ^1P-4d \text{ } ^1D^\circ$
1914. 68	A	15R	0. 05	6. 50	1-2	(1)	1323. 52	A	10R	0. 05	9. 38	1-2	(8)
							1326. 64	A	9R	0. 07	9. 38	0-1	
1807. 31†	A	25R	0. 00	6. 83	2-1	$3p^4 \text{ } ^1P-4s \text{ } ^1S^\circ$	1295. 62	A	6	0. 00	9. 53	2-2	$3p^4 \text{ } ^1P-4s'' \text{ } ^1P^\circ$
1820. 37	A	25R	0. 05	6. 83	1-1	(2)	1302. 86	A	6R	0. 05	9. 52	1-1	(9)
1826. 25	A	25R	0. 07	6. 83	0-1		1296. 18	A	5	0. 00	9. 52	2-1	
1473. 98	A	15R	0. 00	8. 38	2-3	$3p^4 \text{ } ^1P-4s' \text{ } ^1D^\circ$	1303. 12	A	7R	0. 05	9. 52	1-0	
1483. 05	A	15R	0. 05	8. 37	1-2	(3)	1302. 32	A	9R	0. 05	9. 53	1-2	
1487. 12	A	15R	0. 07	8. 37	0-1		1305. 89	A	9R	0. 07	9. 52	0-1	
1474. 37	A	12R	0. 00	8. 37	2-2								
1483. 24	A	12R	0. 05	8. 37	1-1								
1474. 54	A	6R	0. 00	8. 37	2-1								
1472. 97	A	15R	0. 00	8. 38	2-3	$3p^4 \text{ } ^1P-3d \text{ } ^1D^\circ$	1706. 38	A	8	1. 14	8. 38	2-3	$3p^4 \text{ } ^1D-4s' \text{ } ^1D^\circ$
1481. 65	A	15R	0. 05	8. 38	1-2	(4)	1707. 13	A	8	1. 14	8. 37	2-1	(10)
1485. 61	A	12	0. 07	8. 38	0-1		1666. 68	A	25R	1. 14	8. 55	2-2	$3p^4 \text{ } ^1D-4s' \text{ } ^1D^\circ$
1425. 10	A	15R	0. 00	8. 66	2-3	$3p^4 \text{ } ^1P-3d \text{ } ^1D^\circ$							(11)
1433. 28	A	15R	0. 05	8. 66	1-2	(5)	1448. 20	A	12R	1. 14	9. 66	2-1	$3p^4 \text{ } ^1D-4s'' \text{ } ^1P^\circ$
1436. 94	A	12R	0. 07	8. 66	0-1								(12)
1401. 50	A	10R	0. 00	8. 81	2-1	$3p^4 \text{ } ^1P-5s \text{ } ^1S^\circ$							
1409. 32	A	12R	0. 05	8. 81	1-1	(6)	1782. 25	A	12R	2. 74	9. 66	0-1	$3p^4 \text{ } ^1S-4s'' \text{ } ^1P^\circ$
1412. 85	A	12R	0. 07	8. 81	0-1								(13)
1388. 39	A	12R	0. 00	8. 89	2-2	$3p^4 \text{ } ^1P-3p^4 \text{ } ^1P^\circ$							
1389. 16	A	5R	0. 05	8. 94	1-1	(7)							
1381. 55	A	15R	0. 00	8. 94	2-1								
1385. 51	A	12R	0. 05	8. 96	1-0								
1396. 10	A	15R	0. 05	8. 89	1-2								
1392. 59	A	12R	0. 07	8. 94	0-1								

S II

I P 23.3 Anal B List C Oct. 1947

REFERENCES

- A S. B. Ingram, Phys. Rev. **32**, 172 (1928). W L, I, T
 B M. Gilles, Ann. de Phys. [10] **15**, 301 (1931). W L, (I), T
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S II

S II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
259.53†	A	5	0.00	9.80	1½-2½	3p³ ¹S°-3p⁴ ¹P	1234.14	A	3	3.03	13.04	1½-1½	3p³ ¹P°-3p⁴ ¹P
53.79	A	5	0.00	9.85	1½-1½	(1)	1226.70	A	1	3.03	13.09	½-½	(7)
50.50	A	3	0.00	9.87	1½-½		1227.45	A	1	3.03	13.09	1½-½	
							1233.36	A	0	3.03	13.04	½-1½	
906.87	A	3	0.00	13.61	1½-2½	3p³ ¹S°-4s ¹P	1125.00	A	1	3.03	14.01	1½-1½	3p³ ¹P°-4s ¹P
910.49	A	3	0.00	13.56	1½-1½	(2)	1131.05	A	2	3.03	13.94	½-½	(8)
912.74	A	3	0.00	13.53	1½-½		1131.65	A	2	3.03	13.94	1½-½	
							1124.39	A	1	3.03	14.01	½-1½	
1102.32	A	3	1.84	13.04	2½-1½	3p³ ²D°-3p⁴ ²P	1031.34	A	1	3.03	15.00	1½-	3p³ ¹P°-4s' ²D
1096.57	A	2	1.83	13.09	1½-½	(3)	1030.87	A	1	3.03	15.00	½-1½	(9)
1014.42	A	2	1.84	14.01	2½-1½	3p³ ²D°-4s ²P†							
1019.53	A	2	1.83	13.94	1½-½	(4)							
996.00	A	2	1.84	14.23	2½-3½	3p³ ²D°-3d ²F	Air						
1000.48	A	2	1.83	14.17	1½-2½	(5)	2847.73	B	(3)	13.04	17.37	1½-2½	3p⁴ ¹P-4p' ²D°
937.69	A	3	1.84	15.00	2½-	3p³ ²D°-4s' ²D	2881.01	B	(1)	13.09	17.38	½-1½	(10)
937.41	A	3	1.83	15.00	1½-	(6)	2629.1	A	2	13.04	17.73	1½-1½	3p⁴ ¹P-4p' ²P°†
							2670.0	A	3	13.09	17.71	½-½	(11)

S III

I P 34.9 Anal B List C Oct. 1947

REFERENCES

- A S. B. Ingram, Phys. Rev. **33**, 907 (1929). W L, I, T
 B H. A. Robinson, Phys. Rev. **52**, 724 (1937). W L, I, T
 A. Hunter, Phil. Trans. Roy. Soc. London [A] **233**, 303 (1934). T

S III

S III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1200. 97	A	4	0. 10	10. 38	2-3	$3p^2\ ^1P - 3p^2\ ^1D^\circ$ (1)	738. 474	B	4	1. 40	18. 11	2-1	$3p^2\ ^1D - 4s\ ^1P^\circ$ (11)
1194. 02	A	4	0. 04	10. 38	1-2								
1190. 17	A	2	0. 00	10. 37	0-1								
1201. 71	A	2	0. 10	10. 38	2-2		729. 529	B	4	1. 40	18. 32	2-1	$3p^2\ ^1D - 4s\ ^1P^\circ$ (12)
1194. 40	A	3	0. 04	10. 37	1-1								
1202. 10	A	0	0. 10	10. 37	2-1								
1021. 32	A	2	0. 10	12. 19	2-2	$3p^2\ ^1P - 3p^2\ ^1P^\circ$ (2)	836. 315	B	4	3. 35	18. 11	0-1	$3p^2\ ^1S - 4s\ ^1P^\circ$ (13)
*1015. 51	A	2	0. 04	12. 19	1-1								
1021. 10	A	1	0. 10	12. 19	2-1								
*1015. 51	A	2	0. 04	12. 19	1-0		824. 887	B	4	3. 35	18. 32	0-1	$3p^2\ ^1S - 4s\ ^1P^\circ$ (14)
1015. 76	A	1	0. 04	12. 19	1-2								
1012. 49	A	3	0. 00	12. 19	0-1								
735. 251	B	4	0. 10	16. 89	2-1	$3p^2\ ^1P - 3p^2\ ^1P^\circ$ (3)	Air						
732. 376	B	5	0. 04	16. 89	1-1		2863. 53	A	5	21. 07	25. 38	3-4	$4p\ ^1D - 4d\ ^1F^\circ$ (15)
730. 783	B	0	0. 00	16. 89	0-1		2856. 02	A	4	20. 99	25. 32	2-3	
							2872. 00	A	2	20. 96	25. 26	1-2	
728. 69	A	3	0. 10	17. 04	2-1	$3p^2\ ^1P - 3p^2\ ^1S^\circ$ (4)	2904. 31	A	6	21. 07	25. 32	3-3	
725. 86	A	3	0. 04	17. 04	1-1		2756. 89	A	8	21. 07	25. 54	3-3	$4p\ ^1D - 4d\ ^1D^\circ$ (16)
724. 29	A	3	0. 00	17. 04	0-1		2731. 10	A	7	20. 99	25. 51	2-2	
							2718. 88	A	7	20. 96	25. 50	1-1	
702. 78	P		0. 10	17. 67	2-2	$3p^2\ ^1P - 3d\ ^1P^\circ$ (5)	2775. 25	A	5	21. 07	25. 51	3-2	$4p\ ^1D - 5s\ ^1P^\circ$ (17)
*700. 15	A	3	0. 04	17. 67	1-1		2741. 01	A	5	20. 99	25. 50	2-1	
702. 82	P		0. 10	17. 67	2-1								
700. 29	A	3	0. 04	17. 67	1-0		2496. 24	A	6	21. 07	26. 01	3-2	
*700. 15	A	3	0. 04	17. 67	1-2	$3p^2\ ^1P - 4s\ ^1P^\circ$ (6)	2508. 15	A	7	20. 99	25. 92	2-1	$4p\ ^1P - 4d\ ^1D^\circ$ (18)
698. 73	A	2	0. 00	17. 67	0-1		2499. 08	A	6	20. 96	25. 90	1-0	
							2460. 50	A	5	20. 99	26. 01	2-2	
							2489. 59	A	5	20. 96	25. 92	1-1	
683. 47	A	1	0. 10	18. 17	2-2	$3p^2\ ^1P - 3d\ ^1D^\circ$ (7)	2964. 80	A	4	21. 38	25. 54	2-3	$4p\ ^1P - 5s\ ^1P^\circ$ (19)
685. 35	A	0	0. 10	18. 11	2-1		2950. 23	A	3	21. 33	25. 51	1-2	
683. 07	A	0	0. 04	18. 11	1-0		2985. 98	A	6	21. 38	25. 51	2-2	
*680. 95	A	2	0. 04	18. 17	1-2								
*681. 50	A	1	0. 00	18. 11	0-1	$3p^2\ ^1D - 3p^2\ ^1D^\circ$ (8)	2665. 40	A	7	21. 38	26. 01	2-2	$4p\ ^1S - 5s\ ^1P^\circ$ (20)
680. 69	A	2	0. 10	18. 24	2-3		2691. 68	A	5	21. 33	25. 92	1-1	
678. 46	A	2	0. 04	18. 23	1-2		2721. 40	A	5	21. 38	25. 92	2-1	
677. 75	A	2	0. 00	18. 22	0-1		2702. 76	A	5	21. 33	25. 90	1-0	
*680. 95	A	2	0. 10	18. 23	2-2	$3p^2\ ^1D - 3p^2\ ^1S^\circ$ (9)	2636. 88	A	4	21. 33	26. 01	1-2	$4p\ ^1S - 5s\ ^1P^\circ$ (20)
679. 11	A	2	0. 04	18. 22	1-1		2680. 47	A	4	21. 31	25. 92	0-1	
*681. 50	A	1	0. 10	18. 22	2-1								
1077. 835	B	8	1. 40	12. 86	2-2	$3p^2\ ^1D - 3p^2\ ^1D^\circ$ (10)	2726. 82	A	7	21. 48	26. 01	1-2	$4p\ ^1S - 5s\ ^1P^\circ$ (20)
796. 692	B	4	1. 40	16. 89	2-1		2785. 49	A	6	21. 48	25. 92	1-1	
							2797. 39	A	4	21. 48	25. 90	1-0	
788. 984	B	4	1. 40	17. 04	2-1								

S IV

I P 47.1 Anal C List C Sept. 1948

REFERENCES

- A I. S. Bowen, Phys. Rev. **31**, 37 (1928). W L, I, T
 B R. A. Millikan and I. S. Bowen, Phys. Rev. **25**, 600 (1925). W L, I, T
 C I. S. Bowen, Phys. Rev. **39**, 13 (1932). W L, I, T

S IV

S IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1072.992	A	6	0.12	11.62	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^o-3p^3\ ^1D$							
1062.672	A	6	0.00	11.62	$\frac{1}{2}-1\frac{1}{2}$	(1)							
1073.522	A	4	0.12	11.62	$1\frac{1}{2}-1\frac{1}{2}$		803.996	C	4	(8.98)	24.33)	$2\frac{1}{2}-1\frac{1}{2}$	$3p^3\ ^1P-3p^3\ ^1S^o$
815.97	B	5	0.12	15.25	$1\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^o-3p^3\ ^1S$	800.477	C	4	(8.91)	24.33)	$1\frac{1}{2}-1\frac{1}{2}$	(6)
809.69	B	4	0.00	15.25	$\frac{1}{2}-\frac{1}{2}$	(2)	798.277	C	3	(8.87)	24.33)	$\frac{1}{2}-1\frac{1}{2}$	
750.23	B	5	0.12	16.57	$1\frac{1}{2}-1\frac{1}{2}$	$3p\ ^1P^o-3p^3\ ^1P$	666.114	C	4	(8.98)	27.51)	$2\frac{1}{2}-2\frac{1}{2}$	$3p^3\ ^1P-3d\ ^1P^o$
748.40	B	5	0.00	16.50	$\frac{1}{2}-\frac{1}{2}$	(3)	664.822	C	3	(8.98)	27.55)	$2\frac{1}{2}-1\frac{1}{2}$	(7)
753.76	B	5	0.12	16.50	$1\frac{1}{2}-\frac{1}{2}$		663.707	C	3	(8.91)	27.51)	$1\frac{1}{2}-2\frac{1}{2}$	
744.92	B	5	0.00	16.57	$\frac{1}{2}-\frac{1}{2}$		660.945	C	3	(8.87)	27.55)	$\frac{1}{2}-1\frac{1}{2}$	
661.42	B	6	0.12	18.78	$1\frac{1}{2}-2\frac{1}{2}$	$3p\ ^1P^o-3d\ ^1D$	655.553	C	4	(8.98)	27.81)	$2\frac{1}{2}-3\frac{1}{2}$	$3p^3\ ^1P-3d\ ^1D^o\uparrow$
657.34	B	5	0.00	18.78	$\frac{1}{2}-1\frac{1}{2}$	(4)	653.560	C	4	(8.91)	27.80)	$1\frac{1}{2}-2\frac{1}{2}$	(8)
551.17	B	2	0.00	22.40	$\frac{1}{2}-\frac{1}{2}$	$3p\ ^1P^o-4s\ ^1S$	652.523	C	3	(8.87)	27.79)	$\frac{1}{2}-1\frac{1}{2}$	
						(5)							

S v

I P 72.2 Anal C List C Sept. 1948

REFERENCE

- A I. S. Bowen, Phys. Rev. **39**, 8 (1932). W L, I, T

S V

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 786.476	A	8	0.00	15.70	0-1	$3s^2\ ^1S - 3p\ ^1P^o$ (1)
*854.792	A	7	{ (10.39	24.84)	2-2	$3p\ ^1P^o - 3p^2\ ^1P$ (2)
860.462	A	5	{ (10.30	24.74)	1-1	
857.872	A	5	{ (10.39	24.74)	2-1	
849.241	A	6	{ (10.30	24.69)	1-0	
852.185	A	5	{ (10.30	24.84)	1-2	
			{ (10.26	24.74)	0-1	
*663.155	A	5	(10.39	29.01)	2-3	$3p\ ^1P^o - 3d\ ^1D$ (3)
*659.853	A	4	(10.30	29.01)	1-2	
658.262	A	3	(10.26	29.01)	0-1	
*663.155	A	5	(10.39	29.01)	2-2	
*659.853	A	4	(10.30	29.01)	1-1	
*663.155	A	5	(10.39	29.01)	2-1	
439.65	A	1	(10.39	38.48)	2-1	$3p\ ^1P^o - 4s\ ^1S$ (4)
438.19	A	1	(10.30	38.48)	1-1	
437.37	A	1	(10.26	38.48)	0-1	

S VI

I P 87.67 Anal B List C Sept. 1948

REFERENCES

- A H. A. Robinson, Phys. Rev. **52**, 724 (1937). W L, I, T
 B I. S. Bowen and R. A. Millikan, Phys. Rev. **25**, 295 (1925). (I), T

S VI

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 933.382	A	(5)	0.00	13.23	$\frac{1}{2} - 1\frac{1}{2}$	$3s\ ^1S - 3p\ ^1P^o$ (1)
944.517	A	(4)	0.00	13.07	$\frac{1}{2} - \frac{1}{2}$	
248.985	A	4	0.00	13.23	$\frac{1}{2} - 1\frac{1}{2}$	$3s\ ^1S - 4p\ ^1P^o$ (2)
249.271	A	4	0.00	13.07	$\frac{1}{2} - \frac{1}{2}$	
712.682	A	(2)	13.23	30.55	$1\frac{1}{2} - 2\frac{1}{2}$	$3p\ ^1P^o - 3d\ ^1D$ (3)
706.480	A	(1)	13.07	30.54	$\frac{1}{2} - 1\frac{1}{2}$	
712.844	A	(0)	13.23	30.54	$1\frac{1}{2} - 1\frac{1}{2}$	
390.859	A	8	13.23	44.81	$1\frac{1}{2} - \frac{1}{2}$	$3p\ ^1P^o - 4s\ ^1S$ (4)
388.940	A	6	13.07	44.81	$\frac{1}{2} - \frac{1}{2}$	
464.654	A	10	30.55	57.11		$3d\ ^1D - 4f\ ^1F^o$ (5)

CHLORINE

Cl I

I P 12.9 Anal A List A Jan. 1948

REFERENCES

- A L. A. Turner, Phys. Rev. **27**, 397 (1926). W L, I, T
 C. C. Kiess, Bur. Std. J. Research **10**, 827, RP570 (1933). T
 J. B. Green and J. T. Lynn, Phys. Rev. **69**, 165 (1946). T

Cl I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
*1389.9	A	4	0.00	8.88	$1\frac{1}{2}-2\frac{1}{2}$	$3p^4\ ^1P^o-4s\ ^4P$ (1)
1396.5	A	3	0.11	8.95	$\frac{1}{2}-1\frac{1}{2}$	
1379.6	A	5	0.00	8.95	$1\frac{1}{2}-1\frac{1}{2}$	
*1389.9	A	4	0.11	8.99	$\frac{1}{2}-\frac{1}{2}$	
1347.2†	A	5	0.00	9.16	$1\frac{1}{2}-1\frac{1}{2}$	$3p^4\ ^1P^o-4s\ ^4P$ (2)
1351.7	A	3	0.11	9.24	$\frac{1}{2}-\frac{1}{2}$	
1335.8	A	2	0.00	9.24	$1\frac{1}{2}-\frac{1}{2}$	
1363.5	A	5	0.11	9.16	$\frac{1}{2}-1\frac{1}{2}$	

Cl II

I P 23.70 Anal A List D Dec. 1948

REFERENCE

A See: C. C. Kiess and T. L. de Bruin, J. Research Nat.
Bur. Std. **23**, 443, RP1244 (1939). W L, I, T

Cl II

Cl II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1071.05†	A	(20)	0.00	11.53	2-2	3p ⁴ ¹ P - 3p ⁴ ¹ P ^o †	2564.84	A	20	14.79	19.60	3-3	3d ¹ D ^o - 4p'' ¹ D†
1071.76	A	(10)	0.09	11.60	1-1	(1)	2565.29	A	15	14.79	19.60	2-2	(8)
1063.83	A	(10)	0.00	11.60	2-1								
1079.08	A	(15)	0.09	11.53	1-2		2251.50	A	40	14.79	20.27	3-2	3d ¹ D ^o - 1
							2250.96	A	20	14.79	20.27	2-2	(9)
888.07	A	(4)	0.00	13.90	2-1	3p ⁴ ¹ P - 4s ¹ S ^o	2253.16	A	30	14.79	20.27	1-2	
893.56	A	(3)	0.09	13.90	1-1	(2)							
895.95	A	(3)	0.12	13.90	0-1								
864.67	A	(5)	0.00	14.28	2-1	3p ⁴ ¹ P - 3p ⁴ ¹ P ^o	2502.75	A	40	15.89	20.82	3-2	4p ¹ P - 6s ¹ S ^o
872.00	A	(0)	0.12	14.28	0-1	(3)	2498.53	A	30	15.88	20.82	2-2	(10)
							2496.04	A	20	15.88	20.82	1-2	
834.67	A	(10)	0.00	14.79	2-3	3p ⁴ ¹ P - 3d ¹ D ^o †							
839.63	A	(2)	0.09	14.79	1-2	(4)	*2434.10	A	50	15.89	20.96	3-4	4p ¹ P - 5d ¹ D ^o
841.41	A	(4)	0.12	14.79	0-1		*2430.16	A	30	15.88	20.96	2-3	(11)
							2427.79	A	20	15.88	20.96	1-2	
788.75	A	(4)	0.00	15.65	2-3	3p ⁴ ¹ P - 4s' ¹ D ^o	*2434.10	A	50	15.89	20.96	3-3	
793.34	A	(3)	0.09	15.65	1-2	(5)	*2430.16	A	30	15.88	20.96	2-2	
795.36	A	(2)	0.12	15.64	0-1								
789.01	A	(7)	0.00	15.65	2-2								
793.47	A	(3)	0.09	15.64	1-1								
Air							*2667.36	A	40	16.27	20.89	2-1	4p ¹ P - 6s ¹ S ^o
2688.04	A	150	13.90	18.49	1-2	4s ¹ S ^o - 4p' ¹ P	2666.46	A	20	16.27	20.89	1-1	(12)
2676.95	A	100	13.90	18.51	1-1	(6)	*2667.36	A	40	16.27	20.89	0-1	
2672.19	A	50	13.90	18.52	1-0								
							2549.85	A	50	16.27	21.11	2-3	4p ¹ P - 5d ¹ D ^o
							2546.94	A	20	16.27	21.11	1-2	(13)
							2544.84	A	15	16.27	21.12	0-1	
							2547.76	A	12	16.27	21.11	2-2	
							2543.98	A	10	16.27	21.12	1-1	
2658.74	A	100	14.28	18.92	1-2	3p ⁴ ¹ P ^o - 4p' ¹ D							
						(7)							
							2906.25	A	20	17.96	22.20	1-1	4p' ¹ P - 4d' ¹ P ^o
													(14)

Strongest Unclassified Lines of Cl II

2912.06	A	15					2459.86	A	10				
2763.88	A	10					2452.30	A	10				
2754.10	A	25					2445.34	A	20				
2648.19	A	10					2424.01	A	10				
2615.13	A	10					2412.48	A	10				

Cl III

I P 39.7 Anal B List C Nov. 1947

REFERENCES

A I. S. Bowen, Phys. Rev. **31**, 34 (1928). W L, I, T
B I. S. Bowen, Phys. Rev. **45**, 401 (1934). W L, I, T

C1 III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1015. 023	A	7	0. 00	12. 16	1½-2½	3p³ 'S° - 3p⁴ 'P
1008. 777	A	6	0. 00	12. 24	1½-1½	(1)
1005. 280	A	5	0. 00	12. 28	1½- ½	
572. 693	A	4	0. 00	21. 56	1½-2½	3p³ 'S° - 4s 'P
574. 408	A	3	0. 00	21. 49	1½-1½	(2)
575. 582	A	3	0. 00	21. 45	1½- ½	
557. 118	B	7	0. 00	22. 16	1½-2½	3p³ 'S° - 3d 'P
556. 605	B	7	0. 00	22. 18	1½-1½	(3)
556. 232	B	6	0. 00	22. 19	1½- ½	
606. 345	B	5	2. 24	22. 60	2½-2½	3p³ 'D° - 3d 'D†
609. 673	B	4	2. 23	22. 48	1½-1½	(4)
61. 686	B	7	2. 24	24. 22	2½-3½	3p³ 'D° - 3d' 'F
561. 530	B	7	2. 23	24. 21	1½-2½	(5)
561. 738	B	7	2. 24	24. 21	2½-2½	
591. 428	B	4	3. 69	24. 56	1½-1½	3p³ 'P° - 3d' 'P†
591. 646	B	4	3. 68	24. 55	½- ½	(6)
1822. 50	B	6	18. 21	24. 98	4½-3½	3d 'F - 4p 'D°†
1828. 40	B	5	18. 16	24. 91	3½-2½	(7)
1832. 08	B	4	18. 12	24. 85	2½-1½	
1833. 31	B	4	18. 09	24. 82	1½- ½	
1808. 51	B	4	18. 16	24. 98	3½-3½	
1817. 73	B	4	18. 12	24. 91	2½-2½	
1901. 61	B	5	18. 76	25. 25	3½-2½	3d 'D - 4p 'P°†
1912. 90	B	4	18. 75	25. 20	2½-1½	(8)
1917. 87	B	4	18. 75	25. 19	1½- ½	
Air						
2578. 26	B	5	22. 11	26. 89	1½-2½	4s 'P - 4p' 'D°†
2528. 08	B	5	22. 02	26. 90	½-1½	(9)
2323. 50	B	6	22. 11	27. 42	1½-1½	4s 'P - 4p' 'P°†
*2298. 51	B	5	22. 02	27. 39	½- ½	(10)
2336. 45	B	5	22. 11	27. 39	1½- ½	
2965. 56	B	6	23. 26	27. 42	2½-1½	4s' 'D - 4p' 'P°
2991. 82	B	5	23. 26	27. 39	1½- ½	(11)
2970. 67	B	4	23. 26	27. 42	1½-1½	
2616. 97	B	4	24. 98	29. 70	3½-4½	4p 'D° - 4d 'F†
2609. 50	B	4	24. 91	29. 64	2½-3½	(12)
2603. 59	B	5	24. 85	29. 59	1½-2½	
2601. 16	B	4	24. 82	29. 57	½-1½	
2651. 19	B	3	24. 98	29. 64	3½-3½	
2633. 18	B	5	24. 91	29. 59	2½-2½	
2618. 78	B	4	24. 85	29. 57	1½-1½	

Cl III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2519.45	A	5	24.98	29.88	3½-3½	4p 'D°-4d 'D†
2504.23	A	5	24.91	29.84	2½-2½	(13)
2484.27	A	4	24.85	29.82	1½-1½	
2469.20	B	5	24.82	29.82	½-½	
2510.92	A	4	24.91	29.82	2½-1½	
2471.07	B	5	24.98	29.98	3½-2½	4p 'D°-4d 'P†
2419.5	B	5	24.91	30.01	2½-1½	(14)
2394.73	B	5	24.85	30.01	1½-1½	
2283.93	A	7	24.98	30.39	3½-2½	4p 'D°-5s 'P†
2291.30	A	4	24.91	30.29	2½-1½	(15)
2253.07	A	7	24.91	30.39	2½-2½	
2268.95	A	5	24.85	30.29	1½-1½	
2278.34	A	5	24.82	30.24	½-½	
2665.54	A	6	25.25	29.88	2½-3½	4p 'P°-4d 'D†
2661.65	A	5	25.20	29.84	1½-2½	(16)
2403.32	A	5	25.25	30.39	2½-2½	4p 'P°-5s 'P
2422.47	A	4	25.20	30.29	1½-1½	(17)
2442.47	A	5	25.19	30.24	½-½	
2447.14	A	6	25.25	30.29	2½-1½	
2448.58	A	6	25.20	30.24	1½-½	
2379.47	A	5	25.20	30.39	1½-2½	
2416.42	A	7	25.19	30.29	½-1½	
2580.67	B	6	25.42	30.21	2½-3½	4p 'D°-4d 'F†
2577.13	B	5	25.31	30.10	1½-2½	(18)
2340.64	B	6	25.42	30.70	2½-2½	4p 'D°-4d 'D†
*2298.51	B	5	25.31	30.68	1½-1½	(19)
2710.37	B	7	25.42	29.98	1½-2½	4p 'S°-4d 'P†
*2691.52	B	5	25.42	30.01	1½-1½	(20)
2486.91	A	5	25.42	30.39	1½-2½	4p 'S°-5s 'P†
						(21)
2532.48	B	5	25.82	30.70	1½-2½	4p 'P°-4d 'D†
2531.76	B	5	25.81	30.68	½-1½	(22)
2632.67	B	5	26.75	31.44	3½-2½	4p' 'F°-4d' 'D
2624.71	B	3	26.73	31.43	2½-1½	(23)
2620.05	B	4	26.73	31.44	2½-2½	
2370.37	B	6	26.75	31.96	3½-2½	4p' 'F°-5s' 'D
2359.67	B	6	26.73	31.96	2½-1½	(24)
2684.76	B	5	26.89	30.21	2½-3½	4p' 'D°-4d 'F†
2685.40	B	4	26.90	30.10	1½-2½	(25)
2436.1	B	5	26.89	31.96	2½-2½	4p' 'D°-5s' 'D
2439.69	B	5	26.90	31.96	1½-1½	(26)

ARGON

A I

I P 15.69 Anal A List D April 1948

REFERENCES

- A J. C. Boyce, Phys. Rev. **48**, 396 (1935). W L, I, T
 K. W. Meissner, Zeit. Phys. **39**, 172 (1926); **40**, 839 (1927). T
 E. Rasmussen, Dissertation, p. 22, Copenhagen (1932); Zeit. Phys. **75**, 695 (1932). T
 W. F. Meggers and C. J. Humphreys, Bur. Std. J. Research **10**, 437, RP540 (1933). T
 C. J. Humphreys, J. Research Nat. Bur. Std. **20**, 26, RP1061 (1938). T
 B. Edlén, unpublished material (April 1948). T

A I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1066.660	A	15	0.00	11.57	0-1	$3p^6 \text{ } ^1\text{S}-4s \text{ } [1\frac{1}{2}]^{\circ}$ (1)
1048.218†	A	25	0.00	11.78	0-1	$3p^6 \text{ } ^1\text{S}-4s' \text{ } [\frac{1}{2}]^{\circ}$ (2)
894.30	A	4	0.00	13.80	0-1	$3p^6 \text{ } ^1\text{S}-3d \text{ } [\frac{1}{2}]^{\circ}$ (3)
876.06	A	4	0.00	14.09	0-1	$3p^6 \text{ } ^1\text{S}-3d \text{ } [1\frac{1}{2}]^{\circ}$ (4)

A II

I P 27.5 Anal B List C April 1948

REFERENCES

- A J. C. Boyce, Phys. Rev. **48**, 397 (1935). W L, I, T
 B A. H. Rosenthal, Ann. der Phys. [5] **4**, 49 (1930). W L, I
 See C. E. Moore, *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. I, p. 216 (1949). T

A II

A II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
919. 78†	A	15	0. 00	13. 42	1½- ½	3p ^s 1P°-3p ^s 1S	573. 360	A	6	0. 00	21. 53	1½-1½	3p ^s 1P°-3d' 1P
932. 046	A	10	0. 18	13. 42	½- ½	(1)	576. 731	A	5	0. 18	21. 58	½- ½	(11)
754. 817	A	3	0. 00	16. 35	1½-2½	3p ^s 1P°-3d 1D	572. 015	A	5	0. 00	21. 58	1½- ½	
762. 192	A	2	0. 18	16. 37	½-1½	(2)	578. 107	A	4	0. 18	21. 53	½-1½	
744. 920	A	5	0. 00	16. 57	1½-2½	3p ^s 1P°-4s 1P†	519. 326	A	6	0. 00	23. 77	1½-2½	3p ^s 1P°-4d 1D†
748. 193	A	4	0. 18	16. 68	½-1½	(3)	522. 791	A	4	0. 18	23. 79	½-1½	(12)
740. 263	A	12	0. 00	16. 68	1½-1½								
745. 318	A	5	0. 18	16. 74	½- ½								
723. 353	A	14	0. 00	17. 07	1½-1½	3p ^s 1P°-4s 1P	1941. 062	A	2	13. 42	19. 78	½-1½	3p ^s 1S-4p 1P°
725. 542	A	9	0. 18	17. 19	½- ½	(4)	1961. 356	A	2	13. 42	19. 72	½- ½	(13)
718. 083	A	4	0. 00	17. 19	1½- ½		1574. 985	A	4	13. 42	21. 26	½-1½	3p ^s 1S-4p' 1P°
730. 929	A	8	0. 18	17. 07	½-1½		1560. 188	A	3	13. 42	21. 33	½- ½	(14)
698. 760	A	4	0. 00	17. 67	1½-2½	3p ^s 1P°-3d 1F†							
704. 516	A	3	0. 18	17. 70	½-1½	(5)							
671. 854	A	10	0. 00	18. 37	1½-2½	3p ^s 1P°-4s' 1D	Air						
679. 410	A	8	0. 18	18. 35	½-1½	(6)	2942. 90	B	8	17. 07	21. 26	1½-1½	4s 1P-4p' 1P°
672. 849	A	3	0. 00	18. 35	1½-1½		2979. 05	B	6	17. 19	21. 33	½- ½	(15)
666. 014	A	10	0. 00	18. 54	1½-2½	3p ^s 1P°-3d 1F	2891. 61	B	5	17. 07	21. 33	1½- ½	
						(7)	3033. 52	B	6	17. 19	21. 26	½-1½	
661. 868	A	15	0. 00	18. 65	1½-2½	3p ^s 1P°-3d 1D	2844. 12	B	2	17. 07	21. 41	1½-2½	4s 1P-4p' 1D°
670. 947	A	10	0. 18	18. 58	½-1½	(8)	2932. 60	B	4	17. 19	21. 40	½-1½	(16)
664. 558	A	6	0. 00	18. 58	1½-1½		2847. 81	B	2	17. 07	21. 40	1½-1½	
597. 695	A	5	0. 00	20. 65	1½- ½	3p ^s 1P°-4s'' 1S	2806. 16	B	5	19. 78	24. 18	1½-2½	4p 1P°-5s' 1D
602. 854	A	4	0. 18	20. 65	½- ½	(9)	2764. 66	B	3	19. 72	24. 18	½-1½	(17)
580. 261	A	8	0. 00	21. 27	1½-2½	3p ^s 1P°-3d' 1D	2534. 74	B	5	19. 78	24. 65	1½-2½	4p 1P°-4d' 1D
583. 437	A	8	0. 18	21. 34	½-1½	(10)	2510. 63	B	0	19. 72	24. 63	½-1½	(18)
578. 605	A	4	0. 00	21. 34	1½-1½		2544. 72	B	5	19. 78	24. 63	1½-1½	

A III

I P 40.8 Anal C List D Feb. 1948

REFERENCES

- A J. C. Boyce, Phys. Rev. **48**, 396 (1935). W L, I, T
 B T. L. de Bruin, *Zeeman Verhandelingen*, p. 415 (Martinus Nyhoff, The Hague, 1935). W L, I, T
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 B. Edlén, Phys. Rev. **62**, 434 (1942). T

A III

A III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
878. 728	A	12	0. 00	14. 05	2-2	$3p^4 \ ^1P - 3p^4 \ ^3P^o$	1669. 671	A	7	17. 89	25. 28	4-3	$3d \ ^1D^o - 4p \ ^1P^\dagger$
879. 622	A	8	0. 14	14. 17	1-1	(1)	1673. 425	A	7	17. 89	25. 26	3-2	(6)
871. 099	A	10	0. 00	14. 17	2-1		1675. 637	A	4	17. 89	25. 25	2-1	
875. 534	A	9	0. 14	14. 24	1-0								
887. 404	A	10	0. 14	14. 05	1-2								
883. 179	A	9	0. 19	14. 17	0-1								
690. 170	A	8d	0. 00	17. 89	2-	$3p^4 \ ^1P - 3d \ ^1D^o^\dagger$	1914. 398	A	9	19. 37	25. 82	3-2	$3d \ ^1D^o - 4p \ ^1P^\dagger$
695. 537	A	6	0. 14	17. 89	1-	(2)	1915. 564	A	7	19. 37	25. 82	2-1	(7)
637. 282	A	20	0. 00	19. 37	2-3	$3p^4 \ ^1P - 3d \ ^1D^o$	Air						
641. 808	A	12	0. 14	19. 37	1-2	(3)	2484. 11	B	6	23. 01	27. 98	4-4	$3d' \ ^1F^o - 4p' \ ^1F^\dagger$
643. 256	A	9	0. 19	19. 39	0-1		2508. 91	B	3	23. 04	27. 96	3-3	(8)
*637. 282	A	20	0. 00	19. 37	2-2		2533. 92	B	3	23. 07	27. 94	2-2	
641. 364	A	5	0. 14	19. 39	1-1								
636. 818	A	3	0. 00	19. 39	2-1								
553. 470	A	9	0. 00	22. 30	2-1	$3p^4 \ ^1P - 4s \ ^1S^o$	2724. 84	B	10	23. 30	27. 83	3-3	$3d' \ ^1D^o - 4p' \ ^1D^\dagger$
556. 893	A	6	0. 14	22. 30	1-1	(4)	2678. 38	B	9	23. 19	27. 79	2-2	(9)
558. 321	A	5	0. 19	22. 30	0-1		2631. 90	B	7	23. 11	27. 80	1-1	
							2345. 17	B	9	23. 30	28. 56	3-2	$3d' \ ^1D^o - 4p' \ ^1P^\dagger$
							2282. 21	B	7	23. 19	28. 59	2-1	(10)
769. 152	A	12	1. 73	17. 78	2-1	$3p^4 \ ^1D - 3p^4 \ ^1P^o$	2242. 29	B	6	23. 11	28. 61	1-0	
						(5)							

A IV

I P 59.6 Anal C List D Nov. 1947

REFERENCES

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 B T. L. de Bruin, *Physica* **3**, No. 8, 809 (1936). W L, I, T

A IV

A IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
850. 602	A	25	0. 00	14. 51	$1\frac{1}{2}-2\frac{1}{2}$	$3p^3\ ^1S^{\circ}-3p^4\ ^1P$	2809. 44	B	16	31. 11	35. 50	$2\frac{1}{2}-3\frac{1}{2}$	$4s\ ^1P-4p\ ^1D^{\circ}\uparrow$
843. 772	A	20	0. 00	14. 63	$1\frac{1}{2}-1\frac{1}{2}$	(1)	2788. 96	B	14	30. 97	35. 40	$1\frac{1}{2}-2\frac{1}{2}$	(4)
840. 029	A	15	0. 00	14. 70	$1\frac{1}{2}-\frac{1}{2}$		2776. 26	B	10	30. 89	35. 33	$\frac{1}{2}-1\frac{1}{2}$	
801. 409	A	10	2. 62	18. 02	$2\frac{1}{2}-2\frac{1}{2}$	$3p^3\ ^1D^{\circ}-3p^4\ ^1D^{\circ}\uparrow$	2640. 34	B	15	31. 11	35. 78	$2\frac{1}{2}-2\frac{1}{2}$	$4s\ ^1P-4p\ ^1P^{\circ}\uparrow$
801. 086	A	10	2. 60	18. 01	$1\frac{1}{2}-1\frac{1}{2}$	(2)	2608. 06	B	10	30. 97	35. 71	$1\frac{1}{2}-1\frac{1}{2}$	(5)
*689. 007	A	12	2. 62	20. 54	$2\frac{1}{2}-1\frac{1}{2}$	$3p^3\ ^1D^{\circ}-3p^4\ ^1P$	2757. 92	B	14	33. 10	37. 58	$2\frac{1}{2}-3\frac{1}{2}$	$4s\ ^1D-4p\ ^1F^{\circ}\uparrow$
683. 278	A	10	2. 60	20. 67	$1\frac{1}{2}-\frac{1}{2}$	(3)	2784. 47	B	12	33. 11	37. 54	$1\frac{1}{2}-2\frac{1}{2}$	(6)

A V

I P 75 Anal C List B Oct. 1947

REFERENCE

A L. W. Phillips and W. L. Parker, Phys. Rev. **60**, 301 (1941). W L, I, T

A V

A V

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
834. 878	A	4b	0. 25	15. 04	2-3	$3p^3\ ^1P-3p^3\ ^1D^{\circ}\uparrow$	449. 065	A	18	0. 25	27. 74	2-3	$3p^3\ ^1P-3d\ ^1D^{\circ}\uparrow$
827. 055	A	5	0. 09	15. 02	1-2	(1)	446. 949	A	8	0. 09	27. 72	1-2	(5)
822. 159	A	4	0. 00	15. 02	0-1		445. 997	A	5	0. 00	27. 68	0-1	
715. 645	A	3	0. 25	17. 50	2-2	$3p^3\ ^1P-3p^3\ ^1P^{\circ}$	337. 998	A	6	0. 25	36. 77	2-2	$3p^3\ ^1P-4s\ ^1P^{\circ}\uparrow$
*709. 195	A	5	0. 09	17. 50	1-	(2)							(6)
715. 599	A	4	0. 25	17. 50	2-1								
705. 353	A	3	0. 00	17. 50	0-1								
527. 693	A	6	0. 25	23. 65	2-1	$3p^3\ ^1P-3p^3\ ^1S^{\circ}$	558. 481	A	5	2. 01	24. 12	2-1	$3p^3\ ^1D-3p^3\ ^1P^{\circ}$
524. 189	A	5	0. 09	23. 65	1-1	(3)							(7)
522. 090	A	3	0. 00	23. 65	0-1		350. 878	A	3	2. 01	37. 20	2-1	$3p^3\ ^1D-4s\ ^1P^{\circ}$
463. 938	A	7	0. 25	26. 86	2-2	$3p^3\ ^1P-3d\ ^1P^{\circ}\uparrow$							(8)
459. 728	A	1	0. 09	26. 95	1-1	(4)							
462. 415	A	3	0. 25	26. 95	2-1								
461. 227	A	6b	0. 09	26. 86	1-2								

POTASSIUM

K I

I P 4.32 Anal A List D May 1948

REFERENCES

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 A. Fowler, *Report on Series in Line Spectra*, p. 102 (Fleetway Press, London, 1922). W L, I, T

K I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
3217. 151	A	6R	0. 00	3. 84	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^2S-7p\ ^2P^o$
3217. 615	A	4R	0. 00	3. 84	$\frac{1}{2}-\frac{1}{2}$	(1)
3101. 791	A	4R	0. 00	3. 98	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^2S-8p\ ^2P^o$
3102. 051	A	2R	0. 00	3. 98	$\frac{1}{2}-\frac{1}{2}$	(2)
3034. 751	A	} 4R	{ 0. 00	4. 07	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^2S-9p\ ^2P^o$
3034. 911	A		{ 0. 00	4. 07	$\frac{1}{2}-\frac{1}{2}$	(3)
2992. 108	A	} 2R	{ 0. 00	4. 12	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^2S-10p\ ^2P^o$
2992. 215	A		{ 0. 00	4. 12	$\frac{1}{2}-\frac{1}{2}$	(4)
2963. 203	A	} 1R	{ 0. 00	4. 16	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^2S-11p\ ^2P^o$
2963. 277	A		{ 0. 00	4. 16	$\frac{1}{2}-\frac{1}{2}$	(5)
2942. 661	A	} 1R	{ 0. 00	4. 19	$\frac{1}{2}-1\frac{1}{2}$	$4s\ ^2S-12p\ ^2P^o$
2942. 713	A		{ 0. 00	4. 19	$\frac{1}{2}-\frac{1}{2}$	(6)

K II

I P 31.7 Anal C List B May 1948

REFERENCES

- A I. S. Bowen, Phys. Rev. **31**, 497 (1928). W L, I, T
 B T. L. de Bruin, Zeit. Phys. **38**, 94 (1926). W L, I, T

K II

K II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 612.61	A	4	0.00	20.15	0-1	$3p^4 \text{ } ^1S - 4s \text{ } [1\frac{1}{2}]^{\circ}$ (1)	Air 2777.89	B	2	22.62	27.06	1-2	$4p \text{ } [\frac{1}{2}] - 4d \text{ } [2\frac{1}{2}]^{\circ}$ (4)
600.75†	A	5	0.00	20.55	0-1	$3p^4 \text{ } ^1S - 4s' \text{ } [\frac{1}{2}]^{\circ}$ (2)	2504.60	B	3	22.62	27.54	1-1	$4p \text{ } [\frac{1}{2}] - 4d' \text{ } [1\frac{1}{2}]^{\circ}$ (5)
607.90	A	5	0.00	20.31	0-1	$3p^4 \text{ } ^1S - 3d \text{ } [\frac{1}{2}]^{\circ}$ (3)	2743.55	B	4	23.05	27.54	2-1	$4p \text{ } [2\frac{1}{2}] - 4d' \text{ } [1\frac{1}{2}]^{\circ}$ (6)
							2808.99	B	3	23.15	27.54	1-1	$4p \text{ } [1\frac{1}{2}] - 4d' \text{ } [1\frac{1}{2}]^{\circ}$ (7)
Strongest Unclassified Lines of K II													
2550.02	B	6					2342.30	B	3				

K III

I P 46 Anal C List D Jan. 1948

REFERENCES

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 B T. L. de Bruin, Zeit. Phys. **53**, 658 (1929). W L, (I), T
 B. Edlén, Zeit. Phys. **104**, 410 (1937). T
 W.-Z. Tsien, Chinese J. Phys. **3**, No. 2, 118 (1939). T

K III

K III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 765.644	A	6	0.00	16.12	$1\frac{1}{2} - \frac{1}{2}$	$3p^5 \text{ } ^2P^{\circ} - 3p^5 \text{ } ^2S$ (1)	Air 2992.24	B	(6)	25.61	29.73	$2\frac{1}{2} - 3\frac{1}{2}$	$4s \text{ } ^4P - 4p \text{ } ^4D^{\circ}\dagger$ (7)
778.528	A	7	0.27	16.12	$\frac{1}{2} - \frac{1}{2}$		3052.07	B	(6)	25.76	29.81	$1\frac{1}{2} - 2\frac{1}{2}$	
520.611	A	10	0.00	23.71	$1\frac{1}{2} - 2\frac{1}{2}$	$3p^5 \text{ } ^2P^{\circ} - 3d \text{ } ^2D$ (2)	3056.84	B	(5)	25.86	29.90	$\frac{1}{2} - 1\frac{1}{2}$	
529.796	A	8	0.27	23.57	$\frac{1}{2} - 1\frac{1}{2}$		2938.45	B	(5)	25.61	29.81	$2\frac{1}{2} - 2\frac{1}{2}$	
523.792	A	5	0.00	23.57	$1\frac{1}{2} - 1\frac{1}{2}$		2986.20	B	(5)	25.76	29.90	$1\frac{1}{2} - 1\frac{1}{2}$	
497.104	A	15	0.00	24.83	$1\frac{1}{2} - 2\frac{1}{2}$	$3p^5 \text{ } ^2P^{\circ} - 3d \text{ } ^2F$ (3)	2550.02	B	(6)	25.61	30.45	$2\frac{1}{2} - 1\frac{1}{2}$	$4s \text{ } ^4P - 4p \text{ } ^4S^{\circ}$ (8)
							2635.11	B	(5)	25.76	30.45	$1\frac{1}{2} - 1\frac{1}{2}$	
							2689.90	B	(5)	25.86	30.45	$\frac{1}{2} - 1\frac{1}{2}$	
470.089	A	20	0.00	26.26	$1\frac{1}{2} - 1\frac{1}{2}$	$3p^5 \text{ } ^2P^{\circ} - 4s \text{ } ^2P$ (4)							
471.569	A	15	0.27	26.45	$\frac{1}{2} - \frac{1}{2}$								
466.793	A	15	0.00	26.45	$1\frac{1}{2} - \frac{1}{2}$								
474.920	A	9	0.27	26.26	$\frac{1}{2} - 1\frac{1}{2}$								
444.344	A	15	0.00	27.78	$1\frac{1}{2} - 2\frac{1}{2}$	$3p^5 \text{ } ^2P^{\circ} - 4s' \text{ } ^2D$ (5)							
448.595	A	15	0.27	27.79	$\frac{1}{2} - 1\frac{1}{2}$								
413.792	A	10	0.00	29.83	$1\frac{1}{2} - \frac{1}{2}$	$3p^5 \text{ } ^2P^{\circ} - 4s'' \text{ } ^2S$ (6)							

CALCIUM

Ca I

I P 6.09 Anal A List B June 1948

REFERENCES

- A N. E. Wagman, Univ. Pittsburgh Bul. **34**, No. 1, 1 (1937). W L, T
 B H. Crew and G. V. McCawley, *Astroph. J.* **39**, 29 (1914). W L, I
 C H. N. Russell and F. A. Saunders, *Astroph. J.* **61**, 38 (1925); and unpublished material. W L, I, T
 H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 186 (Julius Springer, Berlin, 1939). (I)

Ca I

Ca I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2734.82	C		0.00	4.51	0-1	$4s^2\ ^1S - 5p\ ^1P^o$ (1)	Air 2150.78	B	1	0.00	5.74	0-1	$4s^2\ ^1S - 8p\ ^1P^o$ (8)
2721.645	A	10	0.00	4.53	0-1	$4s^2\ ^1S - 4p'\ ^1P^o$ (2)	2770.79	C	3hv	1.89	6.34	2-3	$4p\ ^1P^o - 4d'\ ^1D$ (9)
2617.66	C	3	0.00	4.71	0-1	$4s^2\ ^1S - 4p'\ ^1D^o?$ (3)	2764.60	C	2hv	1.88	6.34	1-2	
2541.40	C	0	0.00	4.86	0-1	$4s^2\ ^1S - 4p'\ ^1P^o$ (4)	2762.05	C	2	1.87	6.34	0-1	
2398.559	A	2	0.00	5.15	0-1	$4s^2\ ^1S - 5p\ ^1P^o$ (5)	2772.80	C	1	1.89	6.34	2-2	
2275.471	A	1	0.00	5.42	0-1	$4s^2\ ^1S - 6p\ ^1P^o$ (6)	2766.13	C	1	1.88	6.34	1-1	
2200.728	A	1	0.00	5.61	0-1	$4s^2\ ^1S - 7p\ ^1P^o$ (7)	2757.40	C	2h	1.89	6.37	2-1	$4p\ ^1P^o - 4d'\ ^1S$ (10)
							2749.34	C	1h	1.88	6.37	1-1	
							2745.49	C	1h	1.87	6.37	0-1	
							2564.09	C	3	1.89	6.70	2-2	$4p\ ^1P^o - 4d'\ ^1P$ (11)
							2558.20	C	2	1.88	6.70	1-1	
							2565.20	C	2	1.89	6.70	2-1	
							2558.60	C	2	1.88	6.70	1-0	
							2557.18	C	2	1.88	6.70	1-2	
							2554.82	C	2	1.87	6.70	0-1	

Ca II

I P 11.82 Anal A List B May 1948

REFERENCES

- A F. A. Saunders and H. N. Russell, *Astroph. J.* **62**, 1 (1925). W L, I, T
 B A. G. Shenstone, unpublished material (1930). W L, I

Ca II

Ca II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1649.96 1652.02	A A	2 1	0.00 0.00	7.48 7.47	$\frac{1}{2}-1\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4s^2S - 5p^2P^o$ (1)	Vac 1434.3 1433.1	A A		1.69 1.69	10.30 10.30	$2\frac{1}{2}-1\frac{1}{2}-2\frac{1}{2}$	$3d^2D - 6f^2F^o$ (7)
1342.07	A	1	0.00	9.20	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S - 6p^2P^o$ (2)							
Air 2131.43 2132.25 2128.733	A A B	2 1 0	1.69 1.69 1.69	7.48 7.47 7.48	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$3d^2D - 5p^2P^o$ (3)	Air 2208.606 2197.791	A A	3 2	3.14 3.11	8.73 8.73	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4p^2P^o - 6s^2S$ (8)
Vac 1840.21 1838.08	A A		1.69 1.69	8.40 8.40	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$3d^2D - 4f^2F^o$ (4)	2112.763 2103.239 2113.19	A A A	2 2 1	3.14 3.11 3.14	8.98 8.98 8.98	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$4p^2P^o - 5d^2D$ (9)
1644.25	A	0	1.69	9.20		$3d^2D - 6p^2P^o$ (5)	Vac 1851.10 1843.6	A A	2 1	3.14 3.11	9.81 9.81	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4p^2P^o - 7s^2S$ (10)
1555.1 1553.5	A A		1.69 1.69	9.63 9.63	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$3d^2D - 5f^2F^o$ (6)	1815.04 1807.74	A A	1 1	3.14 3.11	9.94 9.94	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$	$4p^2P^o - 6d^2D$ (11)

Ca III

I P 51.00 Anal C List C May 1948

REFERENCES

- A I. S. Bowen, Phys. Rev. **31**, 497 (1928). W L, I, T
 B J. A. Anderson, See I. S. Bowen, Phys. Rev. **31**, 497 (1928). W L, I

Ca III

Ca III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 490.56	A	2	0.00	25.16	0-1	$3p^2S - 3d [\frac{1}{2}]^o$ (1)	Air 2620.82	B	6	30.11	34.82	1-0	$4s [1\frac{1}{2}]^o - 4p [\frac{1}{2}]$ (9)
409.948	A	5	0.00	30.11	0-1	$3p^2S - 4s [1\frac{1}{2}]^o$ (2)	2541.49 2634.17	B B	6 6	29.94 30.11	34.80 34.80	2-2 1-2	$4s [1\frac{1}{2}]^o - 4p' [1\frac{1}{2}]$ (10)
403.734	A	5	0.00	30.58	0-1	$3p^2S - 4s' [\frac{1}{2}]^o$ (3)	2924.33 2813.88 2989.30	B B B	8 7 6	30.58 30.32 30.58	34.80 34.71 34.71	1-2 0-1 1-1	$4s' [\frac{1}{2}]^o - 4p' [1\frac{1}{2}]$ (11)
1562.50	A	6	26.34	34.24	3-2	$3d [3\frac{1}{2}]^o - 4p [2\frac{1}{2}]$ (4)	2866.57 2704.87	B B	7 6	30.58 30.32	34.88 34.88	1-1 0-1	$4s' [\frac{1}{2}]^o - 4p' [\frac{1}{2}]$ (12)
1870.28	A	6	28.20	34.80	3-2	$3d [2\frac{1}{2}]^o - 4p' [1\frac{1}{2}]$ (5)	Vac 1943.12	A	6	33.60	39.95	1-2	$4p [\frac{1}{2}] - 4d [1\frac{1}{2}]^o$ (13)
1854.72	A	6	27.88	34.53	2-2	$3d' [2\frac{1}{2}]^o - 4p [1\frac{1}{2}]$ (6)	Air 2152.47	A	6	34.53	40.27	2-3	$4p [1\frac{1}{2}] - 4d [3\frac{1}{2}]^o$ (14)
Air 2899.78 2988.61 2869.95	B B B	9 7 7	29.94 30.11 29.94	34.20 34.24 34.24	2-3 1-2 2-2	$4s [1\frac{1}{2}]^o - 4p [2\frac{1}{2}]$ (7)	2129.20	A	6	34.71	40.50	1-2	$4p' [1\frac{1}{2}] - 4d [2\frac{1}{2}]^o$ (15)
2687.78 2881.80 2791.63	B B B	8 7 6	29.94 30.11 30.11	34.53 34.40 34.53	2-2 1-1 1-2	$4s [1\frac{1}{2}]^o - 4p [1\frac{1}{2}]$ (8)	2140.39	A	6	34.80	40.56	2-1	$4p' [1\frac{1}{2}] - 5s [1\frac{1}{2}]^o$ (16)

SCANDIUM

Sc I

I P 6.53 Anal A List A Nov. 1948

REFERENCE

A H. N. Russell and W. F. Meggers, Sci. Papers Bur. Std. **22**, No. 558, 340 (1927). W L, I, T

Sc I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2711. 36	A	2	0. 02	4. 57	$2\frac{1}{2}-2\frac{1}{2}$	$a^3D-w^3D^\circ$
2708. 78	A	2	0. 00	4. 56	$1\frac{1}{2}-1\frac{1}{2}$	(1)
2707. 95	A	1	0. 02	4. 58	$2\frac{1}{2}-1\frac{1}{2}$	$a^3D-w^3P^\circ$
2692. 78	A	1	0. 00	4. 58	$1\frac{1}{2}-\frac{1}{2}$	(2)

Sc II

I P 12.8 Anal A List C June 1948

REFERENCES

A H. N. Russell and W. F. Meggers, Sci. Papers Bur. Std. **22**, No. 558, 331 (1927). W L, I, T
 B W. F. Meggers and H. N. Russell, Bur. Std. J. Research **2**, 761, RP55 (1929). W L, I, T

Sc II

Sc II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2552. 38	A	10e	0. 02	4. 86	3-2	$a^3D-y^3P^\circ\uparrow$ (1)	2611. 23	A	3e	3. 22	7. 95	2-2	$z^1D^\circ-f^1D$
2560. 26	A	9e	0. 01	4. 83	2-1								(3)
2563. 23	A	8e	0. 00	4. 81	1-0		2801. 35	A	6e	3. 44	7. 84	4-4	$z^3F^\circ-e^3F\uparrow$
2545. 24	A	5e	0. 01	4. 86	2-2		2789. 20	A	5e	3. 41	7. 83	3-3	(4)
2555. 84	A	6e	0. 00	4. 83	1-1		2782. 34	A	3e	3. 39	7. 82	2-2	
2273. 10	B	3	1. 45	6. 88	0-1	$a^1S-y^1P^\circ$ (2)	2826. 69	A	10e	3. 48	7. 84	3-4	$z^1D^\circ-e^3F\uparrow$
							2822. 17	A	7e	3. 46	7. 83	2-3	
							2819. 56	A	5e	3. 45	7. 82	1-2	

Sc III

I P 24.65 Anal C List A Nov. 1948

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Sc III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1603. 12 1610. 25 1598. 06	A A A	10 8 5	0. 02 0. 00 0. 00	7. 72 7. 67 7. 72	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$3d\ ^3D-4p\ ^3P^\circ$ (1)
731. 66 730. 60	A A	1 0	0. 02 0. 00	16. 90 16. 90	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$3d\ ^3D-4f\ ^3F^\circ$ (2)
Air 2699. 01 2734. 02	B B	(3) (2)	3. 15 3. 15	7. 72 7. 67	$\frac{1}{2}-1\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4s\ ^3S-4p\ ^3P^\circ$ (3)
2010. 48 Vac 1993. 96 Air 2012. 30	A A A	6 4 1	7. 72 7. 67 7. 72	13. 86 13. 86 13. 86	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$4p\ ^3P^\circ-4d\ ^3D$ (4)
Vac 1912. 48 1895. 33	C C	(2) (2)	7. 72 7. 67	14. 18 14. 18	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4p\ ^3P^\circ-5s\ ^3S$ (5)

Sc IV

I P 73.6 Anal E List A Nov. 1948

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Sc IV

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 298. 428	A	8	0. 00	4. 14	0-1	$3p^6\ ^1S-4s\ [1\frac{1}{2}]^\circ$ (1)
293. 248	A	8	0. 00	4. 21	0-1	$3p^6\ ^1S-4s'\ [\frac{1}{2}]^\circ$ (2)
217. 189	A	0	0. 00	5. 68	0-1	$3p^6\ ^1S-5s\ [1\frac{1}{2}]^\circ$ (3)
215. 522	A	2	0. 00	5. 73	0-1	$3p^6\ ^1S-5s'\ [\frac{1}{2}]^\circ$ (4)

TITANIUM

Ti I

I P 6.81 Anal A List B Sept. 1948

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 P Predicted wavelength. W L

Ti I

Ti I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2956.133	A	70R	0.05	4.22	4-4	$a^3F - v^3F^{\circ}$	2541.917	G	20	0.05	4.90	4-3	$a^3F - s^3D^{\circ}$
2948.255	A	60r	0.02	4.21	3-3	(1)	2529.866	L	(4)	0.02	4.90	3-2	(8)
*2941.995	A	60r	0.00	4.19	2-2		2520.543	G	10	0.00	4.90	2-1	
2967.220	F	25	0.05	4.21	4-3		2527.991	G	5	0.02	4.90	3-3	
2956.796	F	25	0.02	4.19	3-2		2519.01	K	(4)	0.00	4.90	2-2	
2937.301	F	25	0.02	4.22	3-4		2517.14	H	(1)	0.00	4.90	2-3	
2933.526	F	25	0.00	4.21	2-3								
2679.949	G	20	0.05	4.65	4-5	$a^3F - v^3G^{\circ}$	2470.98	H	(3)	0.05	5.04	4-3	$a^3F - r^3D^{\circ}$
2669.610	G	15	0.02	4.64	3-4	(2)	2468.360	G	2	0.02	5.02	3-2	(9)
2661.966	L	10	0.00	4.64	2-3		2464.966	G	2	0.00	5.01	2-1	
2685.14	H	(3)	0.05	4.64	4-4		2457.80	H	(2)	0.02	5.04	3-3	
							2458.00	H	(2)	0.00	5.02	2-2	
2669.274	G	2	0.02	4.64	3-3	$a^3F - x^3F^{\circ}$	2440.98	G	10	0.05	5.10	4-5	$a^3F - u^3G^{\circ}$
2657.186	G	10	0.00	4.64	2-3	(3)	2433.23	G	6	0.02	5.09	3-4	(10)
							2428.24	G	2	0.00	5.08	2-3	
2668.36	H	(1)	0.05	4.67	4-4	$a^3F - u^3F^{\circ}$	2446.12	H	(2)	0.05	5.09	4-4	
2660.66	H	(1)	0.02	4.66	3-3	(4)	2438.28	H	(2)	0.02	5.08	3-3	
2654.928	G	5	0.00	4.65	2-2								
2676.09	H	(1)	0.05	4.66	4-3		2424.26	G	10	0.05	5.14	4-4	$a^3F - s^3F^{\circ}$
2653.02	H	(2)	0.02	4.67	3-4		2421.31	G	10	0.02	5.12	3-3	(11)
2648.65	H	(1)	0.00	4.66	2-3		2418.37	G	10	0.00	5.10	2-2	
							2434.09	G	3	0.05	5.12	4-3	
2646.650	G	40	0.05	4.71	4-3	$a^3F - u^3D^{\circ}$	2428.36	K	(2)	0.02	5.10	3-2	
2644.275	G	40	0.02	4.69	3-2	(5)	2411.58	K	(3)	0.02	5.14	3-4	
2641.116	G	40	0.00	4.67	2-1		2411.37	G	2	0.00	5.12	2-3	
2631.55	J	(1)	0.02	4.71	3-3								
2632.424	G	15	0.00	4.69	2-2		2384.52	G	4	0.05	5.22	4-3	$a^3F - g^3D^{\circ}$
							2378.15	G	3	0.02	5.21	3-2	(12)
2611.287	G	25	0.05	4.77	4-4	$a^3F - t^3F^{\circ}$	2371.95	K	(2)	0.00	5.20	2-1	
2605.163	G	25	0.02	4.76	3-3	(6)	2372.23	K	(1)	0.02	5.22	3-3	
2599.910	G	25	0.00	4.75	2-2		*2368.57	K	(2)	0.00	5.21	2-2	
2619.942	G	10	0.05	4.76	4-3								
2611.468	G	8	0.02	4.75	3-2		2380.80	K	(4)	0.05	5.23	4-3	$a^3F - p^3D^{\circ}$
2596.596	G	10	0.02	4.77	3-4		2374.59	K	(3)	0.02	5.22	3-2	(13)
2593.647	L	(3)	0.00	4.76	2-3		2369.29	K	(2)	0.00	5.21	2-1	
							*2368.57	K	(2)	0.02	5.23	3-3	
2604.88	H	(3)	0.05	4.79	4-3	$a^3F - t^3D^{\circ}$	2365.05	K	(1)	0.00	5.22	2-2	
2594.63	H	(2)	0.02	4.78	3-2	(7)							
2586.26	H	(3)	0.00	4.77	2-1		2305.69	G	12	0.05	5.40	4-4	$a^3F - r^3F^{\circ}$
2590.265	G	5	0.02	4.79	3-3		2302.75	G	10	0.02	5.38	3-3	(14)
2583.224	G	2	0.00	4.78	2-2		2299.86	G	10	0.00	5.37	2-2	
2578.91	H	(2)	0.00	4.79	2-3		2314.27	K	(2)	0.05	5.38	4-3	
							2308.88	K	(2)	0.02	5.37	3-2	
							2294.24	G	3	0.02	5.40	3-4	
							2293.78	G	3	0.00	5.38	2-3	

Ti I—Continued

Ti I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2280.00	G	12	0.05	5.46	4-3	$a^1F - o^1D^o$	2742.30	J	15	0.90	5.40	2-2	$a^1D - v^1D^o$
2276.75	G	10	0.02	5.44	3-2	(15)							(25)
2273.33	G	8	0.00	5.43	2-1								
2268.78	K	(4)	0.02	5.46	3-3		2735.613	G	6	0.90	5.41	2-2	$a^1D - u^1D^o$
2267.98	K	(4)	0.00	5.44	2-2								(26)
2260.08	K	(1)	0.00	5.46	2-3								
2272.65	G	8	0.05	5.48	4-5	$a^1F - t^1G^o$	2965.72	G	15	1.06	5.22	2-3	$a^1P - q^1D^o$
2272.45	K	(1)	0.02	5.45	3-4	(16)	2965.231	L	(5)	1.05	5.21	1-2	(27)
*2238.73	K	(8)	0.05	5.56	4-4	$a^1F - q^1F^o$	2965.681	F	8	1.04	5.20	0-1	
2233.79	K	(8)	0.02	5.55	3-3	(17)	2974.926	F	4	1.06	5.21	2-2	
2230.18	K	(7)	0.00	5.53	2-2		2970.552	F	4	1.05	5.20	1-1	
2244.69	K	(7)	0.05	5.55	4-3?		2980.28	G	tr	1.06	5.20	2-1	
*2238.73	K	(8)	0.02	5.53	3-2		2959.98	G	5	1.06	5.23	2-3	$a^1P - p^1D^o$
2227.91	K	(1)	0.02	5.56	3-4		2959.71	G	3	1.05	5.22	1-2	(28)
2230.48	K	(7)	0.05	5.58	4-3	$a^1F - n^1D^o$	2961.48	G	2	1.04	5.21	0-1	
2226.77	K	(6)	0.02	5.56	3-2	(18)	2969.37	G	1	1.06	5.22	2-2	
2223.19	K	(7)	0.00	5.55	2-1		2966.38	G	1	1.05	5.21	1-1	
2219.75	K	(5)	0.02	5.58	3-3		2805.680	F	6	1.06	5.46	2-3	$a^1P - o^1D^o$
2218.38	K	(5)	0.00	5.56	2-2		2809.150	F	5	1.05	5.44	1-2	(29)
2211.36	K	(1)	0.00	5.58	2-3		2812.963	F	2	1.04	5.43	0-1	
2836.09	G	1	0.84	5.20	5-4	$a^1F - v^1D^o$	*2817.835	K	2	1.06	5.44	2-2	
*2836.605	G	1	0.83	5.18	4-3	(19)	2817.37	K	(3)	1.05	5.43	1-1	
2836.40	G	1n	0.82	5.17	3-2		2757.397	L	6	1.06	5.54	2-1	$a^1P - w^1S^o$
2835.63	G	2	0.81	5.17	2-1		2749.062	L	5	1.05	5.54	1-1	(30)
2834.75	G	2	0.81	5.16	1-0		2744.846	G	5	1.04	5.54	0-1	
*2828.05	G	2	0.83	5.20	4-4		2731.145	G	4	1.06	5.58	2-3	$a^1P - n^1D^o$
2830.03	G	2n	0.82	5.18	3-3		m2733.56	P	Fe II	1.05	5.56	1-2	(31)
2831.40	G	1n	0.81	5.17	2-2		2736.71	H	(2)	1.04	5.55	0-1	
2832.26	G	1n	0.81	5.17	1-1		2741.82	H	(1)	1.06	5.56	2-2	
2821.51	G	1	0.82	5.20	3-4		2740.88	H	(2)	1.05	5.55	1-1	
2825.06	G	1	0.81	5.18	2-3		2733.265	G	30	1.06	5.58	2-2	$a^1P - t^1P^o$
*2828.05	G	2	0.81	5.17	1-2		2731.592	G	7	1.05	5.57	1-1	(32)
2976.32	G	2	0.90	5.04	2-3	$a^1D - r^1D^o$	2739.804	G	15	1.06	5.57	2-1	
2991.79	G	1	0.90	5.02	2-2	(20)	2735.298	G	10	1.05	5.56	1-0	
2947.72	G	3	0.90	5.08	2-3	$a^1D - u^1G^o$	2725.084	G	10	1.05	5.58	1-2	
2922.92	G	2	0.90	5.12	2-3	(21)	2727.416	L	8	1.04	5.57	0-1	
2912.072	F	40	0.90	5.13	2-3	$a^1D - s^1F^o$	2990.48	G	3	1.45	5.58	4-3	$b^1F - n^1D^o$
2802.465	F	15	0.90	5.30	2-1	(22)	2990.98	G	3	1.44	5.56	3-2	(33)
						(23)	2990.03	G	3	1.42	5.55	2-1	
						$a^1D - v^1F^o$	2928.320	F	30	1.50	5.71	4-4	$a^1G - u^1G^o$
						(24)	2758.061	G	20	1.50	5.97	4-3	(34)
													$a^1G - u^1F^o$
													(35)

Strongest Unclassified Lines of Ti I

2905.649	F	5	IVA [IVA]			2246.14	G	4					
2892.77	H	[3]				2238.20	K	(6)					
2688.820	G	10				2229.67	K	(7)					
2684.812	G	5				2225.11	K	(8)					
2656.920	G	4				2143.52	K	(6)					
2656.376	G	4				2142.05	K	(5)					
2649.597	G	3				2139.41	K	(5)					
2649.306	G	4				2126.89	K	(5)					
2580.809	G	5				2123.50	K	(7)					
2504.522	G	3				2121.90	K	(6)					
2264.07	G	5				2117.01	K	(6)					

Ti II

I P 13.6 Anal A List B Sept. 1948

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 G A. S. King, Mt. Wilson Contr. No. 274; *Astroph. J.* **59**, 155 (1924). W L
 H R. J. Lang, unpublished material. W L, (I)
 I C. E. Moore, unpublished material. W L, I
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 P Predicted wavelength. W L

Ti II

Ti II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2909. 912	D	7	0. 05	4. 29	4½-4½	a ¹F - z ¹G°†	2498. 94	F	(2)	0. 60	5. 54	3½-2½	a ¹F - z ¹D°
2913. 08	I	1	0. 03	4. 26	3½-3½	(1)	2481. 49	F	(1)	0. 57	5. 54	2½-1½	(10)
2474. 22	F	(2)	0. 05	5. 04	4½-3½	a ¹F - y ¹D°†	2054. 54	E	(3)	0. 60	6. 61	3½-2½	a ¹F - w ¹D°
2477. 21	F	(2)	0. 03	5. 01	3½-2½	(2)	2041. 46	E	(3)	0. 57	6. 62	2½-1½	(11)
2478. 64	F	(5)	0. 01	4. 99	2½-1½		2043. 26	E	tr	0. 57	6. 61	2½-2½	
Vac													
1914. 32	P		0. 05	6. 50	4½-3½	a ¹F - z ¹D°							
1914. 11	H	(00)	0. 03	6. 48	3½-2½	(3)	2764. 821	J	10	1. 08	5. 54	2½-2½	a ¹D - z ¹D°
1909. 74	H	(2)	0. 01	6. 48	2½-1½		2761. 291	J	7	1. 08	5. 54	1½-1½	(12)
1911. 01	H	(0)	0. 00	6. 46	1½-½		2762. 22	F	2	1. 08	5. 54	1½-2½	
1908. 29	H	(3)	0. 03	6. 50	3½-3½								
1909. 33	H	(2)	0. 01	6. 48	2½-2½		2716. 20	F	4	1. 08	5. 62	2½-1½	a ¹D - y ¹P°
1906. 30	H	(3)	0. 00	6. 48	1½-1½		2719. 39	F	2	1. 08	5. 61	1½-½	(13)
							2713. 76	F	(1)	1. 08	5. 62	1½-1½	
Air													
2525. 619	J	30	0. 15	5. 04	4½-3½	b ¹F - y ¹D°							
2531. 266	J	20	0. 13	5. 01	3½-2½	(4)	2884. 099	D	70	1. 13	5. 40	4½-4½	a ¹G - y ¹G°
2534. 640	J	20	0. 12	4. 99	2½-1½		2877. 418	D	60	1. 11	5. 40	3½-3½	(14)
2535. 881	J	10	0. 11	4. 98	1½-½		2887. 456	D	2	1. 13	5. 40	4½-3½	
2517. 448	J	2	0. 13	5. 04	3½-3½		2874. 08	E	2	1. 11	5. 40	3½-4½	
2524. 655	J	8	0. 12	5. 01	2½-2½								
2529. 74	P		0. 11	4. 99	1½-1½		2717. 304	J	3	1. 13	5. 67	4½-5½	a ¹G - z ¹H°
2510. 90	F	2	0. 12	5. 04	2½-3½		2725. 79	F	3	1. 11	5. 64	3½-4½	(15)
2519. 79	F	0	0. 11	5. 01	1½-2½								
Air													
2891. 050	D	15	0. 60	4. 87	3½-2½	a ¹F - y ¹D°							
2888. 923	D	15	0. 57	4. 84	2½-1½	(5)	2862. 34	F	30	1. 23	5. 54	1½-2½	a ¹P - z ¹D°
2868. 732	D	15	0. 7	4. 87	2½-2½		2851. 087	D	20	1. 22	5. 54	½-1½	(16)
							2861. 291	D	3	1. 23	5. 54	1½-1½	
2858. 399	D	8	0. 57	4. 89	2½-1½	a ¹F - z ¹P°	2806. 407	D	5	1. 22	5. 61	½-½	a ¹P - y ¹P°
						(6)							(17)
2841. 914	D	30	0. 60	4. 95	3½-3½	a ¹F - y ¹F°							
2832. 158	D	20	0. 57	4. 93	2½-2½	(7)							
2853. 922	D	10	0. 60	4. 93	3½-2½								
2820. 36	E	4	0. 57	4. 95	2½-3½								
2784. 648	J	3	0. 60	5. 04	3½-3½	a ¹F - y ¹D°	2346. 35	F	(1)	1. 24	6. 50	2½-3½	b ¹P - z ¹D°
2780. 55	F	5n	0. 57	5. 01	2½-2½	(8)	2349. 97	F	(3)	1. 23	6. 48	1½-2½	(18)
2763. 90	F	(1)	0. 57	5. 04	2½-3½		2347. 46	F	(2)	1. 22	6. 48	½-1½	
							2355. 17	F	(2)	1. 24	6. 48	2½-2½	
2571. 036	J	20	0. 60	5. 40	3½-4½	a ¹F - y ¹G°	2350. 67	F	(2)	1. 23	6. 48	1½-1½	
2555. 988	J	10	0. 57	5. 40	2½-3½	(9)	2354. 61	F	(1)	1. 22	6. 46	½-½	
2573. 72	F	0	0. 60	5. 40	3½-3½		2355. 86	F	(1)	1. 24	6. 48	2½-1½	
							2357. 82	F	(2)	1. 23	6. 46	1½-½	

Ti II—Continued[illegible]**Ti II—Continued**

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2945. 47	F	50	3. 86	8. 05	4½-5½	z 'F°-e 'G
*2941. 993§	D	50	3. 84	8. 04	3½-4½	(26)
2938. 69	F	30	3. 82	8. 02	2½-3½	
2936. 17	F	30	3. 81	8. 01	1½-2½	
2958. 30	P	2	3. 86	8. 04	4½-4½	
2952. 10	F	4	3. 84	8. 02	3½-3½	
2926. 75	F	10	3. 86	8. 08	4½-3½	z 'F°-f 'F
2910. 76	F	0n	3. 84	8. 08	3½-3½	(27)
2800. 65	F	30	3. 86	8. 27	4½-3½	z 'F°-e 'D
2790. 62	F	3n	3. 84	8. 26	3½-2½	(28)
2788. 00	F	8	3. 82	8. 25	2½-1½	
2782. 30	F	2n	3. 81	8. 24	1½-½	
2785. 99	F	6n	3. 84	8. 27	3½-3½	
2778. 48	F	2n	{3. 82 3. 81	{8. 26 8. 25	{2½-2½ 1½-1½	
2646. 08	F	50n	3. 86	8. 53	4½-4½	z 'F°-f 'F†
2642. 15	F	20n	3. 84	8. 51	3½-3½	(29)
2638. 70	F	10n	3. 82	8. 50	2½-2½	
2635. 60	F	5n	3. 81	8. 49	1½-1½	
2943. 12	F	12n	3. 89	8. 08	3½-3½	z 'F°-f 'F
2931. 27	F	40	3. 85	8. 06	2½-2½	(30)
2918. 77	F	2n	3. 85	8. 08	2½-3½	
2751. 70	F	50n	3. 89	8. 37	3½-4½	z 'F°-e 'G
2746. 70	F	30n	3. 85	8. 35	2½-3½	(31)
2768. 20	F	tr	3. 89	8. 35	3½-3½	
2990. 17	F	10	3. 95	8. 08	2½-3½	z 'D°-f 'F
2979. 20	F	10	3. 92	8. 06	1½-2½	(32)
2752. 85	F	4n	4. 05	8. 53	3½-4½	z 'D°-f 'F
2757. 62	E	3n	4. 04	8. 51	2½-3½	(33)
2758. 35	F	2n	4. 02	8. 50	1½-2½	
2758. 93	P	1n	4. 02	8. 49	½-1½	
2762. 92	E	(0n)	4. 05	8. 51	3½-3½	
2765. 65	F	0n	4. 04	8. 50	2½-2½	
2764. 28	P	(1)	4. 02	8. 49	1½-1½	
2954. 76	F	60	4. 29	8. 47	4½-5½	z 'G°-e 'H
2958. 98	P	50	4. 26	8. 44	3½-4½	(34)

Strongest Unclassified Lines of Ti II

2977. 80	F	7				2875. 8	F	10n
2941. 4	F	8n				2875. 39	F	15n
2916. 09	F	10				2870. 04	F	25n
2914. 89	F	10				2862. 0	F	20n
2913. 34	F	10				2860. 8	F	4n
2908. 14	F	4n				2857. 8	F	15
2906. 7	F	20				2698. 52	F	30
2890. 6	F	8n				2572. 648	J	5
2888. 62	F	10n						

Ti III

I P 28.02 Anal C List C Sept. 1948

REFERENCE

A H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. **66**, 13 (1927). W L, I, T

Ti III

Ti III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
*1298.67	A	50	0.05	9.56	4-3	$a^3F-z^3D^{\circ}$	2563.42	A	15	4.74	9.56	3-3	$a^3D-z^3D^{\circ}\dagger$
1298.95	A	40	0.02	9.53	3-2	(1)	2565.42	A	8	4.72	9.53	2-2	(6)
*1298.67	A	50	0.00	9.51	2-1		2567.53	A	8	4.70	9.51	1-1	
*1294.67	A	50	0.02	9.56	3-3		2580.43	A	5	4.74	9.53	3-2	
1295.91	A	30	0.00	9.53	2-2		2576.43	A	5	4.72	9.51	2-1	
1286.38	A	40	0.05	9.65	4-4	$a^3F-z^3F^{\circ}$	2516.01	A	20	4.74	9.65	3-4	$a^3D-z^3F^{\circ}\dagger$
1289.32	A	30	0.02	9.60	3-3	(2)	2527.80	A	15	4.72	9.60	2-3	(7)
1291.64	A	20	0.00	9.56	2-2		2540.02	A	15	4.70	9.56	1-2	
1293.26	A	30	0.05	9.60	4-3								
*1294.67	A	50	0.02	9.56	3-2								
1282.49	A	3	0.02	9.65	3-4								
1498.65	A	30	1.05	9.28	2-2	$a^1D-z^1D^{\circ}$	2984.76	A	10	5.15	9.28	2-2	$b^1D-z^1D^{\circ}$
						(3)							(8)
1327.60	A	15	1.05	10.34	2-1	$a^1D-z^1P^{\circ}$	2413.97	A	15	5.15	10.26	2-3	$b^1D-z^1F^{\circ}$
						(4)							(9)
1455.22	A	40	1.78	10.26	4-3	$a^1G-z^1F^{\circ}$	2375.02	A	6	5.15	10.34	2-1	$b^1D-z^1P^{\circ}$
						(5)							(10)

Ti IV

I P 43.06 Anal C List D Sept. 1948

REFERENCE

A H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. **66**, 18 (1927). W L, I, T

Ti IV

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
779.14	A	20	0.05	15.89	$2\frac{1}{2}-1\frac{1}{2}$	$3d^3D-4p^3P^{\circ}$
781.78	A	20	0.00	15.79	$1\frac{1}{2}-\frac{1}{2}$	(1)
776.82	A	10	0.00	15.89	$1\frac{1}{2}-1\frac{1}{2}$	
Air						
2067.50	A	15	9.92	15.89	$\frac{1}{2}-1\frac{1}{2}$	$4s^3S-4p^3P^{\circ}$
2103.08	A	10	9.92	15.79	$\frac{1}{2}-\frac{1}{2}$	(2)
Vac						
1467.25	A	30	15.89	24.30	$1\frac{1}{2}-2\frac{1}{2}$	$4p^3P^{\circ}-4d^3D$
1451.75	A	30	15.79	24.29	$\frac{1}{2}-1\frac{1}{2}$	(3)
1469.21	A	15	15.89	24.29	$1\frac{1}{2}-1\frac{1}{2}$	
Air						
2546.85	A	12	24.30	29.15	$2\frac{1}{2}-3\frac{1}{2}$	$4d^3D-4f^3F^{\circ}\dagger$
2541.75	A	8	24.29	29.15	$1\frac{1}{2}-2\frac{1}{2}$	(4)

VANADIUM

VI

I P 6.71 Anal A List B Sept. 1948

REFERENCES

- A W. F. Meggers, see W. F. Meggers and H. N. Russell, J. Research Nat. Bur. Std. **17**, 125, RP906 (1936).
 W L, I, T
 D W. Ludwig, Zeit. Wiss. Ptg. **16**, 157 (1917). W L
 F A. S. King, Mt. Wilson Contr. No. 283; Astroph. J. **60**, 282 (1924). W L, I
 G F. Exner and E. Haschek, see H. Kayser, *Handbuch der Spectroscopie* **6**, 750 (1912). W L
 H C. E. Moore, Phys. Rev. **55**, 710 (1939) and Ref. A. W L, (I), T

VI

VI

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2977.550	D	25r	0.07	1.35	4½-3½	α ⁴ F - w ⁴ D ^o †	2870.575	D	35r	0.07	4.37	4½-3½	α ⁴ F - w ⁴ D ^o
2962.784	D	30r	0.04	1.30	3½-2½	(1)	2864.386	D	30r	0.04	4.35	3½-2½	(6)
2954.33	G	20	0.02	0.80	2½-1½		2859.997	D	25	0.02	4.33	2½-1½	
2943.197	D	30r	0.00	0.09	1½-½		2855.252	D	20	0.00	4.32	1½-½	
2957.30	G	10?	0.04	1.35	3½-3½		2851.784	D	20	0.04	4.37	3½-3½	
2946.54	G	15	0.02	1.30	2½-2½		2849.197	H	15	0.02	4.35	2½-2½	
2942.354	D	10	0.00	0.80	1½-1½		2848.807	D	15	0.00	4.33	1½-1½	
							2836.714	D	3	0.02	4.37	2½-3½	
2938.67	G	6	0.00	4.20	1½-	α ⁴ F - 1°	2838.06	G	5	0.00	4.35	1½-2½	
						(2)							
2942.33	G	10	0.07	4.26	4½-4½	α ⁴ F - v ⁴ F°	*2778.058	H	4	0.07	4.51	4½-4½?	α ⁴ F - z ³ G°
2935.880	D	15	0.04	4.24	3½-3½	(3)							(7)
*2937.696	D	15	0.02	4.22	2½-2½		*2747.534§	A	(6)	0.07	4.56	4½-5½	α ⁴ F - w ⁴ G°
2955.806	D	15	0.00	4.20	1½-1½		2733.334	A	(8)	0.04	4.56	3½-4½	(8)
m2953.84	P	Fe I	0.07	4.24	4½-3½		2725.062	A	4	0.02	4.55	2½-3½	
2949.62	G	25	0.04	4.22	3½-2½								
2922.582	D	4	0.02	4.20	2½-1½		2717.433	A	3	0.02	4.56	2½-3½	α ⁴ F - z ³ F°
2919.931	H	6	0.04	4.26	3½-4½								(9)
2925.880	D	4	0.02	4.24	2½-3½								
			0.00	4.22	1½-2½		2707.589	A	3	0.07	4.63	4½-3½	α ⁴ F - w ³ F°†
2926.258	H	12	0.04	4.26	3½-2½	α ⁴ F - y ² D°	2677.117	A	(4)	0.00	4.61	1½-2½	(10)
2915.33	G	10	0.02	4.25	2½-1½	(4)							
*2910.435§	H	5?	0.02	4.26	2½-2½		2670.918	A	(7)	0.04	4.66	3½-2½	α ⁴ F - w ² D°
2903.700	D	12	0.00	4.25	1½-1½		2657.708	A	5	0.02	4.66	2½-2½	(11)
2898.822	D	5	0.00	4.26	1½-2½		2668.894	A	3	0.00	4.62	1½-1½	
2923.627	D	70Ra	0.07	4.29	4½-3½	α ⁴ F - v ⁴ D°†	2686.512	A	(10)	0.07	4.66	4½-5½	α ⁴ F - v ⁴ G°
2914.924	D	50Ra	0.04	4.27	3½-2½	(5)	2678.674	A	(5)	0.04	4.65	3½-4½	(12)
2906.134	D	40r	0.02	4.26	2½-1½		2671.669	A	(10)	0.02	4.64	2½-3½	
2899.602	D	30	0.00	4.26	1½-½		2665.958	A	(20)	0.00	4.63	1½-2½	
2904.126	D	20	0.04	4.29	3½-3½		2695.235	A	4	0.07	4.65	4½-4½	
2899.207	D	20	0.02	4.27	2½-2½		2685.018	A	5	0.04	4.64	3½-3½	
2894.583	D	8	0.00	4.26	1½-1½		*2675.753	A	(8)	0.02	4.63	2½-2½	

V I—Continued

V I—Continued

I A	Ref	Int	E P		J	Multiplet (No)		I A	Ref	Int	E P		J	Multiplet (No)
			Low	High							Low	High		
Air								Air						
2661. 424	A	(70R)	0.07	4.71	4½-3½	a 'F -t 'D°† (13)		2439. 102	A	(50r)	0.07	5.13	4½-4½	a 'F -t 'G° (24)
2656. 224	A	(60R)	0.04	4.69	3½-2½			2431. 568	A	10	0.04	5.12	3½-3½	
2651. 896	A	(50R)	0.02	4.67	2½-1½			2445. 224	A	3	0.07	5.12	4½-3½	
2647. 710	A	(40R)	0.00	4.66	1½-½			2420. 614	A	3	0.02	5.12	2½-3½	a 'F -v 'H° (25)
2645. 256	A	(10)	0.04	4.71	3½-3½			2431. 940	A	20r?	0.07	5.14	4½-5½	
2643. 14	A	(5)	0.02	4.69	2½-2½	a 'F -w 'P°† (14)		2427. 735	A	20	0.04	5.12	3½-4½	
2642. 289	A	(4)	0.00	4.67	1½-1½			2441. 352	A	(15)	0.07	5.12	4½-4½	a 'F -t 'G° (26)
2633. 588	A	4	0.00	4.69	1½-2½			2416. 748	A	(150R)	0.07	5.17	4½-5½	
2556. 815	A	(6)	0.04	4.87	3½-2½			2406. 748	A	(50R)	0.04	5.17	3½-4½	a 'F -v 'P° (27)
2556. 016	A	(9)	0.02	4.85	2½-1½			2401. 901	A	(60R)	0.02	5.16	2½-3½	
2547. 073	A	6	0.00	4.85	1½-1½			2399. 954	A	(50R)	0.00	5.14	1½-2½	
2574. 020	A	(50R)	0.07	4.86	4½-4½	a 'F -u 'F° (15)		2420. 115	A	(100R)	0.07	5.17	4½-4½	a 'F -r 'D°† (28)
2562. 125	A	(60R)	0.04	4.86	3½-3½			2412. 686	A	(80R)	0.04	5.16	3½-3½	
2552. 648	A	(50r)	0.02	4.85	2½-2½			2407. 900	A	(40R)	0.02	5.14	2½-2½	
2545. 981	A	(30r?)	0.00	4.85	1½-1½			2426. 126	A	15	0.07	5.16	4½-3½	a 'F -u 'F°† (29)
2577. 292	A	(20r?)	0.07	4.86	4½-3½			2418. 738	A	15	0.04	5.14	3½-2½	
*2564. 817	A	(40r?)	0.04	4.85	3½-2½	a 'F -x 'S° (16)		2398. 134	A	20	0.04	5.19	3½-2½	a 'F -r 'D°† (28)
2554. 856	A	(15)	0.02	4.85	2½-1½			2396. 706	A	8	0.02	5.17	2½-1½	
2558. 893	A	(15)	0.04	4.86	3½-4½			2387. 475	A	5	0.02	5.19	2½-2½	
2549. 965	A	12	0.02	4.86	2½-3½			*2397. 775	A	40h	0.07	5.22	4½-3½	
2543. 723	A	(20)	0.00	4.85	1½-2½			2390. 774	A	30	0.04	5.20	3½-2½	a 'F -s 'F° (31)
2517. 500	A	8	0.02	4.92	2½-1½	a 'F -s 'D° (17)		2388. 084	A	35	0.02	5.18	2½-1½	
2508. 822	A	5	0.00	4.92	1½-1½			2384. 286	A	20	0.00	5.18	1½-½	
2526. 213	A	(100R)	0.07	4.95	4½-3½			2384. 64	A	5	0.04	5.22	3½-3½	a 'F -u 'F°† (29)
2519. 622	A	(100R)	0.04	4.94	3½-2½			2380. 178	A	5	0.02	5.20	2½-2½	
2511. 940	A	(100r)	0.02	4.93	2½-1½			2380. 266	A	8	0.00	5.18	1½-1½	a 'F -v 'D°† (32)
2506. 902	A	150R	0.00	4.92	1½-½	a 'F -v 'D°† (18)		2397. 496	A	4	0.04	5.19	3½-3½	
2511. 642	A	(80r)	0.04	4.95	3½-3½			2390. 868	A	4	0.02	5.18	2½-2½	
*2507. 777	A	(100R)	0.02	4.94	2½-2½			2383. 038	A	3	0.00	5.18	1½-2½	a 'F - 2°† (30)
2503. 300	A	(50r)	0.00	4.93	1½-1½			2398. 277	A	20h	0.07	5.21	4½-3½	
2499. 959	A	8	0.02	4.95	2½-3½		a 'F -v 'D°† (18)		2340. 479	A	(50r)	0.07	5.34	4½-4½
2499. 244	A	(12)	0.00	4.94	1½-2½			2334. 434	A	40r	0.04	5.33	3½-3½	
2515. 145	A	(30r)	0.02	4.92	2½-1½			2329. 529	A	30	0.02	5.31	2½-2½	a 'F -t 'F°† (33)
2500. 382	A	5	0.02	4.95	2½-2½			2325. 873	A	30	0.00	5.31	1½-1½	
2506. 482	A	6	0.00	4.92	1½-1½			2347. 026	A	10	0.07	5.33	4½-3½	a 'F -g 'D°† (32)
2530. 174	A	(80R)	0.07	4.95	4½-5½	a 'F -u 'G°† (19)		2339. 673	A	20	0.04	5.31	3½-2½	
2517. 142	A	(80R)	0.04	4.94	3½-4½			2333. 33	A	20	0.02	5.31	2½-1½	
*2507. 777	A	(100R)	0.02	4.94	2½-3½			2327. 970	A	10	0.04	5.34	3½-4½	
2501. 608	A	(60R)	0.00	4.93	1½-2½			2324. 347	A	6	0.02	5.33	2½-3½	a 'F -s 'G° (35)
m2519. 55	P	V I	0.04	4.94	3½-3½			2322. 096	A	15	0.00	5.31	1½-2½	
2510. 242	A	(8)	0.02	4.93	2½-2½	a 'F -v 'F°† (20)		2324. 748	A	40	0.07	5.38	4½-3½	a 'F -g 'D°† (32)
2534. 206	A	3	0.07	4.94	4½-3½?			2320. 156	A	25	0.04	5.36	3½-2½	
2498. 232	A	(20h)	0.02	4.96	2½-2½			2315. 634	A	30	0.02	5.35	2½-1½	
2471. 443	A	10	0.02	5.01	2½-3½			2311. 465	A	30	0.00	5.34	1½-½	a 'F -u 'D° (21)
2499. 094	A	15	0.04	4.98	3½-2½			2312. 410	A	8	0.04	5.38	3½-3½	
2487. 528	A	10	0.02	4.98	2½-2½	a 'F -w 'H°† (22)		2310. 180	A	20	0.02	5.36	2½-2½	a 'F -t 'F°† (33)
2505. 540	A	(15)	0.07	4.99	4½-5½			2308. 287	A	15	0.00	5.35	1½-1½	
2495. 787	A	20	0.04	4.98	3½-4½			2302. 531	A	4	0.02	5.38	2½-3½?	
2488. 203	A	5	0.02	4.98	2½-3½			*2295. 414	A	4	0.04	5.42	3½-2½	a 'F -x 'F°† (34)
2435. 518	A	(100R)	0.07	5.14	4½-4½		a 'F -t 'F° (23)		2299. 544	A	3	0.07	5.44	
2428. 269	A	(100R)	0.04	5.12	3½-3½			2291. 527	A	10	0.07	5.45	4½-5½	a 'F -s 'G° (35)
2421. 058	A	(120R)	0.02	5.11	2½-2½			2283. 382	A	10	0.04	5.44	3½-4½	
2415. 326	A	(110R)	0.00	5.11	1½-1½			2276. 889	A	6	0.02	5.44	2½-3½	
2441. 892	A	(30)	0.07	5.12	4½-3½			2272. 048	A	4	0.00	5.43	1½-2½	a 'F -s 'G° (35)
2432. 014	A	(25r?)	0.04	5.11	3½-2½		*2295. 414	A	4	0.07	5.44	4½-4½?		
2423. 370	A	40r?	0.02	5.11	2½-1½		2286. 581	A	8	0.04	5.44	3½-3½		
2421. 976	A	(140R)	0.04	5.14	3½-4½		2279. 152	A	4	0.02	5.43	2½-2½		
2417. 351	A	(100R)	0.02	5.12	2½-3½									
2413. 031	A	(60R)	0.00	5.11	1½-2½									

V I—Continued

V I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2276.661	A	3	0.07	5.49	4½-4½	a 'F -s 'G°† (36)	2098.50	H	(40)	0.07	5.95	4½-5½	a 'F -g 'G°† (47)
2264.39	A	30 Fe?	0.07	5.52	4½-3½		*2096.19	H	(20)	0.04	5.93	3½-4½	
*2256.968§	A	50r	0.04	5.51	3½-2½	a 'F -p 'D° (37)	*2096.37§	H	(20)	0.02	5.90	2½-3½	
2250.672	A	30r?	0.02	5.50	2½-1½		*2096.19	H	(20)	0.00	5.89	1½-2½	
2245.756	A	30	0.00	5.50	1½-½		2106.33	H	(15)	0.07	5.93	4½-4½	
2252.681	A	5	0.04	5.52	3½-3½		2104.57	H	(15)	0.04	5.90	3½-3½	
2247.520	A	9	0.02	5.51	2½-2½		2102.23	H	(15)	0.02	5.89	2½-2½	
2243.742	A	8h	0.00	5.50	1½-1½								
2241.846	A	40r	0.07	5.57	4½-4½	a 'F -r 'F°† (38)	2092.44	A	60r	0.07	5.97	4½-4½	a 'F -o 'F° (48)
2234.680	A	10	0.04	5.56	3½-3½		2090.64	A	20r	0.04	5.94	3½-3½	
*2225.787	A	10	0.02	5.56	2½-2½		*2092.30	A	10r	0.02	5.92	2½-2½	
2222.834	A	15	0.00	5.55	1½-1½		2091.29	A	20r	0.00	5.90	1½-1½	
2230.362	A	20	0.04	5.57	3½-4½		2100.75	A	6	0.07	5.94	4½-3½	
2225.422	A	30	0.02	5.56	2½-3½		2100.51	A	8	0.04	5.92	3½-2½	
2237.228	A	50r	0.07	5.58	4½-4½	a 'F -q 'F° (39)	2097.34	A	7	0.02	5.90	2½-1½	
*2229.734§	A	25r?	0.04	5.57	3½-3½		*2082.49	A	20r?	{0.04	5.97	3½-4½	
2223.014	A	20	0.02	5.57	2½-2½		2086.31	A	8	{0.02	5.94	2½-3½	
2218.238	A	25r	0.00	5.56	1½-1½					0.00	5.92	1½-2½	
2241.213	A	7	0.07	5.57	4½-3½		2090.96	H	(10)	0.00	5.90	1½-2½	a 'F - 10°† (49)
2232.252	A	8	0.04	5.57	3½-2½		2085.91	H	(20)	0.00	5.92	1½-2½	11°†
2225.029	A	8	0.02	5.56	2½-1½		2096.72	H	(15)	0.04	5.93	3½-	12°
*2225.787	A	10	0.04	5.58	3½-4½		2088.56	H	(40)	0.02	5.93	2½-	12°
2216.245	A	4	0.00	5.57	1½-2½		2095.77	H	(25)	0.04	5.93	3½-3½	13°
2220.450	A	3	0.02	5.57	2½-1½	a 'F -u 'P° (40)	2087.62	H	(10)	0.02	5.93	2½-3½	13°
2213.692	A	10	0.00	5.57	1½-1½		2104.84	H	(20)	0.07	5.93	4½-3½	14°
2228.835	A	15	0.04	5.58	3½-3½	a 'F -r 'G°† (41)	2094.71	H	(40)	0.04	5.93	3½-3½	14°
2219.652	A	3	0.04	5.60	3½-4½		*2086.57	H	15nr	0.02	5.93	2½-3½	14°
2231.412	A	30	0.07	5.60	4½-5½	a 'F - 2a° (42)	2085.56	H	(10)	0.02	5.93	2½-2½	15°†
2158.12	A	(15)	0.00	5.72	1½-	4°†	2084.12	H	(10nv)	0.04	5.96	3½-	17°†
2164.88	A	(15)	0.04	5.74	3½-2½	5°†	2038.85	H	(90)	0.07	6.12	4½-3½	a 'F -n 'D°† (50)
*2146.64	A	(10)	0.02	5.77	2½-1½	6°†	2035.30	H	(80)	0.04	6.10	3½-2½	
2125.84	H	(20)	0.04	5.85	3½-3½	7°†	2034.06	H	(90)	0.02	6.08	2½-1½	
*2117.48§	H	(20)	0.02	5.85	2½-3½	7°	2032.27	H	(60)	0.00	6.07	1½-½	
2124.15	H	(12)	0.07	5.88	4½-3½	8°	2029.36	H	(50)	0.04	6.12	3½-3½	
2102.58	H	(15)	0.02	5.89	2½-	9°†	2027.62	H	(40)	0.02	6.10	2½-2½	
2204.930	A	12	0.07	5.67	4½-4½	a 'F -p 'F°† (43)	2028.42	H	(40)	0.00	6.08	1½-1½	
2200.174	A	15	0.04	5.65	3½-3½		2041.00	H	(60)	0.04	6.09	3½-2½	a 'F - 21°† (51)
2194.65	A	10	0.02	5.64	2½-2½		2008.70	H	(10)	0.04	6.18	3½-	23°†
2189.95	A	6	0.00	5.64	1½-1½		2010.48	H	(20)	0.00	6.14	1½-1½?	a 'F -t 'D°† (52)
2211.350	A	3	0.07	5.65	4½-3½		Vac						
2203.658	A	4	0.04	5.64	3½-2½		1984.91	H	(50)	0.07	6.29	4½-5½	a 'F -p 'G°† (53)
2193.82	A	5	0.04	5.67	3½-4½		1983.37	H	(50)	0.04	6.26	3½-4½	
m2191.21	P	V I	0.02	5.65	2½-3½		1982.45	H	(40)	0.02	6.24	2½-3½	
2188.06	A	3?	0.00	5.64	1½-2½		1982.06	H	(40)	0.00	6.23	1½-2½	
2196.29	A	5	0.02	5.64	2½-1½	a 'F -t 'P°† (44)	1989.82	H	(12)	0.04	6.24	3½-3½	
2202.724	A	60r	0.07	5.67	4½-3½	a 'F -o 'D°† (45)	1967.98	H	(80r?)	0.07	6.34	4½-4½	a 'F -n 'F° (54)
2196.40	A	40r?	0.04	5.66	3½-2½		1966.52	H	(60)	0.04	6.32	3½-3½	
2191.10	A	30	0.02	5.65	2½-1½		1965.26	H	(60)	0.02	6.30	2½-2½	
2187.39	A	10	0.00	5.64	1½-½		1964.27	H	(60)	0.00	6.28	1½-1½	
2191.65	A	3	0.04	5.67	3½-3½		1975.42	H	(10)	0.07	6.32	4½-3½	
2182.22	A	120R	0.07	5.72	4½-5½	a 'F -r 'G° (46)	1972.48	H	(15)	0.04	6.30	3½-2½	
2177.00	A	100R	0.04	5.71	3½-4½		1969.57	H	(15)	0.02	6.28	2½-1½	
2173.15	A	80R	0.02	5.70	2½-3½		1959.12	H	(30)	0.04	6.34	3½-4½	
2170.74	A	60R	0.00	5.69	1½-2½		1959.36	H	(30)	0.02	6.32	2½-3½	
2187.95	A	15	0.07	5.71	4½-4½		1959.97	H	(40)	0.00	6.30	1½-2½	
2181.97	A	20	0.04	5.70	3½-3½		1966.76	H	(60)	0.07	6.35	4½-3½	a 'F -m 'D° (55)
2177.24	A	10	0.02	5.69	2½-2½		1965.07	H	(60)	0.04	6.32	3½-2½	
							1963.47	H	(70)	0.02	6.30	2½-1½	
							1961.69	H	(50)	0.00	6.29	1½-½	
							*1957.90	H	(50)	{0.04	6.35	3½-3½	
							1958.18	H	(12)	{0.02	6.32	2½-2½	
										0.00	6.30	1½-1½	

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2835. 660	D	5	0. 27	4. 63	2½—3½?	a 'D — w 'F° (56)
2618. 908	A	5	0. 27	4. 98	1½—2½	a 'D — u 'D° (57)
2497. 655	A	6h	0. 27	5. 22	2½—3½	a 'D — r 'D°† (58)
2480. 606	A	(30h)	0. 30	5. 27	4½—4½?	a 'D — w 'D° (59)
2482. 115	A	(20h)	0. 29	5. 26	3½—3½?	
2489. 13	A	4h	0. 30	5. 26	4½—3½?	
2488. 737	A	4h	0. 29	5. 24	3½—2½?	
2473. 652	A	5h	0. 29	5. 27	3½—4½?	
2476. 510	A	7h	0. 27	5. 26	2½—3½?	
2478. 97	A	5h	0. 27	5. 24	1½—2½?	
2392. 898	A	40h	0. 30	5. 46	4½—5½	a 'D — z 'F° (60)
2386. 409	A	20h	0. 29	5. 46	3½—4½?	
*2391. 268	A	30h	0. 27	5. 44	2½—3½?	
2395. 429	A	10h	0. 27	5. 43	1½—2½?	
2396. 492	A	15h	0. 26	5. 41	½—1½?	
2395. 104	A	30h	0. 29	5. 44	3½—3½?	
*2397. 775	A	40h	0. 27	5. 43	2½—2½?	
2403. 362	A	5h	0. 27	5. 41	1½—1½?	
2403. 029	A	10h	0. 26	5. 40	½—½?	
2405. 733	A	6	0. 30	5. 44	4½—3½?	
			0. 27	5. 40	1½—½?	
2405. 245	A	10h	0. 30	5. 43	4½—3½?	a 'D — z 'P° (61)
2398. 697	A	10h	0. 29	5. 43	3½—3½?	
2394. 270	A	10	0. 30	5. 45	4½—5½	a 'D — s 'G°† (62)
*2146. 64	A	(10)	0. 29	6. 03	3½—2½	a 'D — 18°† (63) 19°† 23° 24°† 28°† 32°† 33°†
2138. 62	H	(10)	0. 27	6. 04	2½—2½	
*2092. 30	H	(10r)	0. 29	6. 18	3½—	
*2086. 57	H	(15nr)	0. 27	6. 19	2½—2½	
2077. 16	H	(15)	0. 29	6. 23	3½—	
2012. 35	H	(20)	0. 27	6. 40	1½—1½	
2011. 54	H	(15)	0. 29	6. 42	3½—	
3002. 65	G	8	1. 08	5. 19	3½—2½	a 'D — v 'P°† (64)
3004. 82	G	10	1. 06	5. 17	2½—1½	
3004. 33	G	4	1. 05	5. 15	1½—½	
2995. 617	D	4	1. 05	5. 17	1½—1½	
2998. 62	G	4	1. 04	5. 15	½—½	
2981. 537	H	0	1. 08	5. 22	3½—3½	a 'D — r 'D°† (65)
2978. 936	D	4	1. 06	5. 20	2½—2½	
2893. 47	G	4h	1. 08	5. 34	3½—4½	a 'D — s 'F°† (66)
2869. 484	D	3	1. 08	5. 38	3½—3½	a 'D — q 'D° (67)
*2870. 04	G	5	1. 06	5. 36	2½—2½	
			1. 05	5. 35	1½—1½	
2866. 971	D	10	1. 08	5. 38	3½—2½	a 'D — u 'P°† (68)
2862. 418	D	10	1. 06	5. 37	2½—1½	
2859. 001	D	4h	1. 05	5. 36	1½—½	
*2854. 057	D	4h	1. 05	5. 37	1½—1½	
2853. 82	G	3h	1. 04	5. 36	½—½	

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
*2778. 058	H	4	1. 08	5. 52	3½-3½?	a 'D -p 'D°† (69)
*2774. 01	G	3	1. 06	5. 51	2½-2½	
*2774. 01	G	3	1. 05	5. 50	1½-½	
2689. 114	A	3	1. 08	5. 67	3½-4½	a 'D -p 'F°† (70)
m2688. 71	P	V II	1. 06	5. 65	2½-3½	
m2686. 49	P	V I	1. 05	5. 64	1½-2½	
m2698. 67	P	V I	1. 08	5. 65	3½-3½	
2693. 918	A	6	1. 06	5. 64	2½-2½	
2696. 760	A	(6)	1. 06	5. 64	2½-1½	
2688. 942	A	4	1. 05	5. 64	1½-1½	a 'D -t 'P°† (71)
2685. 843	A	4	1. 08	5. 67	3½-3½	a 'D -o 'D°† (72)
m2683. 08	P	V II	1. 06	5. 66	2½-2½	
*2685. 515	A	4	1. 05	5. 64	1½-½	
2675. 977	A	4	1. 06	5. 67	2½-3½	
*2675. 753	A	(8)	1. 05	5. 66	1½-2½	
2676. 636	A	3	1. 04	5. 65	½-1½	
2620. 284	A	(20)	1. 08	5. 79	3½-2½	a 'D -t 'P°† (73)
2611. 255	A	8	1. 06	5. 79	2½-1½	
2605. 084	A	4	1. 05	5. 78	1½-½	
2610. 891	A	6	1. 06	5. 79	2½-2½	
2604. 294	A	5	1. 05	5. 79	1½-1½	
2600. 798	A	5	1. 04	5. 78	½-½	

3016. 17	G	20	1. 21	5. 30	2½-1½	a 'P -w 'S° (74)
2999. 20	G	12	1. 19	5. 30	1½-1½	
2990. 93	G	8	1. 18	5. 30	½-1½	
2963. 818	D	6	1. 21	5. 38	2½-3½	a 'P -g 'D°† (75)
*2976. 527§	D	8	1. 21	5. 36	2½-2½	
2968. 981	D	3	1. 19	5. 35	1½-1½	
2974. 217	H	8	1. 19	5. 34	1½-½	
2961. 127	D	10	1. 21	5. 38	2½-2½	a 'P -u 'P°† (76)
2968. 29	G	5	1. 21	5. 37	2½-1½	
2957. 176	H	8h	1. 19	5. 36	1½-½	
2944. 76	G	10h	1. 19	5. 38	1½-2½	
2943. 84	G	12h	1. 18	5. 37	½-1½	
2866. 447	D	20	1. 21	5. 52	2½-3½	a 'P -p 'D°† (77)
2857. 972	D	20	1. 19	5. 51	1½-2½	
2855. 518	D	6	1. 18	5. 50	½-1½	
2863. 076	D	12	1. 19	5. 50	1½-1½	
2858. 787	D	10	1. 18	5. 50	½-½	
2768. 30	G	3	1. 21	5. 67	2½-3½	a 'P -o 'D°† (78)
2698. 724	A	(40)	1. 21	5. 79	2½-2½	a 'P -t 'P° (79)
*2685. 515	A	4	1. 19	5. 79	1½-1½	
2679. 707	A	5	1. 18	5. 78	½-½	
2699. 12	A	(20)	1. 21	5. 79	2½-1½	
2686. 356	A	9	1. 19	5. 78	1½-½	
*2685. 14§	A	(15)	1. 19	5. 79	1½-2½	
2678. 878	A	10	1. 18	5. 79	½-1½	
2514. 41	A	10h	1. 21	6. 12	2½-3½?	a 'P -n 'D°† (80)

V I—Continued

V I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air *2482. 711	A	(15h)	1. 21	6. 18	2½—	a ¹ P — 23° (81)	Air 2275. 475 2284. 494 2284. 982	A A A	3 20 3	1. 70 1. 70 1. 70	7. 13 7. 13 7. 11	½—½? 1½—½? ½—1½?	a ¹ P — s ¹ P° (93)
2996. 48 2975. 077	G D	6 8	1. 37 1. 34	5. 49 5. 49	4½—4½ 3½—3½	a ¹ G — s ¹ G° (82)	2839. 43	G	4	1. 79	6. 14	1½—1½	a ¹ D — t ¹ D°† (94)
2917. 94 2916. 00	G G	8 8	1. 37 1. 34	5. 60 5. 58	4½—4½ 3½—3½	a ¹ G — r ¹ G° (83)	2324. 189 2312. 531	A A	10 10	1. 80 1. 79	7. 11 7. 13	2½—1½? 1½—½?	a ¹ D — s ¹ P° (95)
2773. 66 2768. 93	G G	8 6	1. 37 1. 34	5. 82 5. 80	4½—3½ 3½—2½	a ¹ G — s ¹ F°† (84)	*2854. 057	D	4h	1. 85	6. 17	4½—5½?	a ¹ H — x ¹ I° (96)
2731. 347 2722. 560 2738. 075	A A A	(80r?) (60r) 5	1. 37 1. 34 1. 37	5. 89 5. 88 5. 88	4½—5½ 3½—4½ 4½—4½	a ¹ G — s ¹ H° (85)	2481. 11	A	10h	1. 84	6. 81	3½—2½	a ¹ H — 34° (97)
2697. 744 2696. 996 2712. 217	A A A	(50r?) (40r?) 4	1. 37 1. 34 1. 37	5. 95 5. 92 5. 92	4½—4½ 3½—3½ 4½—3½	a ¹ G — q ¹ G°† (86)	2868. 130 2866. 620	D D	20 15	1. 88 1. 86	6. 19 6. 17	5½—6½ 4½—5½	a ¹ H — x ¹ I° (98)
2534. 825	A	15h	1. 37	6. 24	4½—3½	a ¹ G — r ¹ F°† (87)	2652. 919 2653. 824	A A	(20) (25)	1. 88 1. 86	6. 54 6. 51	5½—4½ 4½—3½	a ¹ H — p ¹ G° (99)
*2482. 711	A	(15h)	1. 37	6. 34	4½—4½	a ¹ G — n ¹ F° (88)	2564. 228 *2564. 817	A A	(20h) (40r?)	1. 88 1. 86	6. 70 6. 68	5½—5½ 4½—4½	a ¹ H — r ¹ H° (100)
2388. 910 2386. 956 2398. 877 2377. 083	A A A A	40 40 4 3	1. 37 1. 34 1. 37 1. 34	6. 54 6. 51 6. 51 6. 54	4½—4½ 3½—3½ 4½—3½ 3½—4½	a ¹ G — p ¹ G° (89)	2934. 72 2930. 89 2927. 646 2924. 92 2922. 715 2921. 18 2949. 91 m2943. 88 2938. 30 2933. 234	G G D G H G G P F H	20h 15h 10h 5h 5h 6h 2h V I 5h 3h	2. 12 2. 09 2. 07 2. 05 2. 03 2. 02 2. 12 2. 09 2. 07 2. 05	6. 32 6. 30 6. 28 6. 26 6. 25 6. 24 6. 30 6. 28 6. 26 6. 25	6½—6½ 5½—5½ 4½—4½ 3½—3½ 2½—2½ 1½—1½ 6½—5½? 5½—4½ 4½—3½ 3½—2½	z ¹ G°—h ¹ G† (101)
2316. 751 2314. 691	A A	25 20	1. 37 1. 34	6. 70 6. 68	4½—5½ 3½—4½	a ¹ G — r ¹ H° (90)							
2852. 899	D	25	1. 70	6. 03	1½—½	a ¹ P — v ¹ S°† (91)							
2785. 66 2783. 76	G G	10 7	1. 70 1. 70	6. 13 6. 14	1½—2½ ½—1½	a ¹ P — t ¹ D° (92)							

Strongest Unclassified Lines of V I

2846. 600	D	20	IV			2511. 182	A	20h				
2755. 653	A	(10)	V			2498. 024	A	(10h)	III			
2731. 518	A	(20h?)	IV			2475. 178	A	10				
2656. 55	A	10				2465. 664	A	10h				
*2637. 222§	A	(20H)	III			2216. 666	A	10				
2607. 752	A	(10)	III			2089. 94	H	(20)				
2568. 376	A	30h				2079. 56	H	(15dr?)				
2533. 800	A	10h				2072. 75	H	(10)				
2520. 31	A	10h				2043. 13	H	(20)				
2514. 322	A	15h				2041. 74	H	(10N)				

V II

I P 14.1 Anal A List B Oct. 1948

REFERENCE

A W. F. Meggers and C. E. Moore, J. Research Nat. Bur. Std. 25, 83, RP1317 (1940). W L, I, T
 * and §§ = Blend Fe III?

V II

V II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2700. 944	A	300r	0. 04	4. 61	4-5	$a^3D - z^3F^o$	2140. 064	A	150	0. 04	5. 81	4-3	$a^3D - z^3P^o$
2706. 17	A	200rs	0. 03	4. 59	3-4	(1)	2141. 973	A	100	0. 03	5. 79	3-2	(7)
*2715. 676	A	180rs	0. 01	4. 56	2-3		2143. 038	A	60	0. 01	5. 77	2-1	
2728. 644	A	150	0. 00	4. 53	1-2		2134. 12	A	200	0. 03	5. 81	3-3	
2739. 715	A	100	0. 00	4. 50	0-1		2137. 31	A	100	0. 01	5. 79	2-2	
*2715. 676	A	180rs	0. 04	4. 59	4-4		2139. 798	A	100	0. 00	5. 77	1-1	
2723. 218	A	20	0. 03	4. 56	3-3		2129. 477	A	40	0. 01	5. 81	2-3	
2733. 906	A	25	0. 01	4. 53	2-2		m2134. 07	P	V II	0. 00	5. 79	1-2	
2742. 43	A	25	0. 00	4. 50	1-1		2138. 17	A	60	0. 00	5. 77	0-1	
2732. 92	A	5	0. 04	4. 56	4-3								
2741. 563	A	4	0. 03	4. 53	3-2		2123. 340	A	60	0. 04	5. 85	4-4	$a^3D - y^3D^o$
							2128. 241	A	7	0. 03	5. 82	3-3	(8)
2711. 740	A	100	0. 04	4. 59	4-3	$a^3D - z^3D^o$	m2134. 16	P	V III	0. 04	5. 82	4-3	
2714. 205	A	50	0. 03	4. 57	3-2	(2)	2131. 85	A	80	0. 03	5. 81	3-2	
2713. 050	A	40	0. 01	4. 56	2-1		2126. 932	A	20	0. 01	5. 82	2-1	
2702. 185	A	200r	0. 03	4. 59	3-3		2127. 34	A	5	0. 00	5. 81	1-0	
2706. 70	A	150r	0. 01	4. 57	2-2		*2117. 482§	A	12	0. 03	5. 85	3-4	
2707. 86	A	100	0. 00	4. 56	1-1		2123. 62	A	10	0. 01	5. 82	2-3	
2694. 74	A	20H	0. 01	4. 59	2-3		2124. 00	A	5d?	0. 00	5. 81	1-2	
2701. 535	A	10	0. 00	4. 57	1-2		2122. 11	A	1	0. 00	5. 82	0-1	
2705. 220	A	40	0. 00	4. 56	0-1								
							Vac						
2687. 960	A	300r	0. 04	4. 63	4-4	$a^3D - z^3D^o$	1920. 36	A	12	0. 01	6. 44	2-1?	$a^3D - z^3S^o$
2679. 327	A	200r	0. 03	4. 63	3-3	(3)							(9)
2682. 875	A	100	0. 01	4. 61	2-2								
2685. 689	A	30	0. 00	4. 60	1-1		Air						
2688. 717	A	100	0. 04	4. 63	4-3		2924. 017	A	300R	0. 39	4. 61	5-5	$a^3F - z^3F^o$
2690. 252	A	150	0. 03	4. 61	3-2		2924. 633	A	250R	0. 37	4. 59	4-4	(10)
2690. 792	A	200	0. 01	4. 60	2-1		2930. 798	A	150r	0. 35	4. 56	3-3	
2689. 883	A	100	0. 00	4. 59	1-0		2941. 485	A	100	0. 33	4. 53	2-2	
2678. 572	A	100r	0. 03	4. 63	3-4		2950. 344	A	80	0. 32	4. 50	1-1	
2672. 005	A	150r	0. 01	4. 63	2-3		2941. 372	A	200	0. 39	4. 59	5-4	
2677. 804	A	150r	0. 00	4. 61	1-2		2944. 568	A	250r	0. 37	4. 56	4-3	
2683. 09	A	100	0. 00	4. 60	0-1		2952. 07	A	150r	0. 35	4. 53	3-2	
							2957. 520	A	100	0. 33	4. 50	2-1	
2545. 460	A	15	0. 04	4. 89	4-5	$a^3D - z^3G^o \uparrow$	2907. 457	A	120	0. 37	4. 61	4-5	
						(4)	2911. 050	A	160r	0. 35	4. 59	3-4	
2493. 576	A	15	0. 04	4. 99	4-4	$a^3D - z^3F^o \uparrow$	*2920. 377	A	100	0. 33	4. 56	2-3	
2500. 076	A	4	0. 03	4. 96	3-3	(5)	2934. 394	A	60	0. 32	4. 53	1-2	
2148. 42	A	40	0. 03	5. 77	3-2	$a^3D - z^3P^o$	2919. 989	A	50	0. 37	4. 59	4-3	$a^3F - z^3D^o$
2145. 990	A	40	0. 01	5. 76	2-1	(6)	*2920. 377	A	100	0. 35	4. 57	3-2	(11)
2147. 52	A	20	0. 00	5. 75	1-0		2917. 365	A	50	0. 33	4. 56	2-1	
2143. 706	A	5	0. 01	5. 77	2-2		2906. 448	A	150r	0. 35	4. 59	3-3	
2142. 74	A	4	0. 00	5. 76	1-1		2910. 007	A	140r	0. 33	4. 57	2-2	
							*2910. 380§	A	150r	0. 32	4. 56	1-1	
							2896. 198	A	100	0. 33	4. 59	2-3	
							2903. 068	A	100	0. 32	4. 57	1-2	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)		
			Low	High						Low	High				
Air							Vac								
2908.810	A	300R	0.39	4.63	5-4	$a^3F - z^3D^o$ (12)	1587.40	A	50	0.39	8.17	5-4	$a^3F - z^3D^o$ (19)		
2893.314	A	250r	0.37	4.63	4-3		1586.58	A	40	0.37	8.15	4-3			
2892.650	A	200r	0.35	4.61	3-2		1585.361	A	30	0.35	8.13	3-2			
2891.636	A	150r	0.33	4.60	2-1		1584.06	A	15	0.33	8.13	2-1			
2889.614	A	100	0.32	4.59	1-0		1582.80	A	8	0.32	8.12	1-0			
2892.434	A	150r	0.37	4.63	4-4		*1582.57	A	15	{0.37	8.17	4-4			
2880.026	A	150	0.35	4.63	3-3			1582.32	A		8	0.35		8.15	3-3
2882.493	A	120	0.33	4.61	2-2				1581.99		A	8		0.33	8.13
*2884.776	A	150	0.32	4.60	1-1						0.32	8.13		1-1	
2879.158	A	40	0.35	4.63	3-4										
2869.957	A	10	0.33	4.63	2-3										
2875.687	A	30	0.32	4.61	1-2										
2742.670	A	30	0.39	4.89	5-5	$a^3F - z^3G^o$ (13)	1547.20	A	15	0.39	8.37	5-6?	$a^3F - y^3G^o$ (20)		
2743.768	A	20	0.37	4.86	4-4		1553.09	A	15	0.37	8.32	4-5?			
2744.54	A	4	0.35	4.84	3-3		1558.76	A	15	0.35	8.27	3-4?			
*2758.53	A	9H1	0.39	4.86	5-4		1562.98	A	10	0.33	8.23	2-3?			
							1571.74	A	2	0.32	8.18	1-2?			
						1565.98	A	8	0.35	8.23	3-3?				
						1573.78	A	0	0.33	8.18	2-2?				
2682.535	A	6	0.39	4.99	5-4	$a^3F - z^3F^o$ (14)									
*2685.41	A	1?	0.37	4.96	4-3										
2668.595	A	4	0.37	4.99	4-4										
2673.955	A	4	0.35	4.96	3-3										
m2657.26	P	V II	0.35	4.99	3-4										
2665.277	A	3	0.33	4.96	2-3										
2275.586	A	7	0.35	5.77	3-2	$a^3F - z^3P^o$ (15)									
2271.848	A	10	0.33	5.76	2-1										
*2273.024	A	40h	0.32	5.75	1-0										
2269.293	A	3	0.33	5.77	2-2										
2267.612	A	5	0.32	5.76	1-1										
*2258.814§	A	50	0.39	5.85	5-4	$a^3F - y^3D^o$ (16)									
2261.084	A	30	0.37	5.82	4-3										
*2256.984§	A	20	0.35	5.81	3-2										
2250.490	A	5	0.33	5.82	2-1										
2250.382	A	3	0.32	5.81	1-0										
2248.913	A	4	0.37	5.85	4-4										
2252.953	A	7	0.35	5.82	3-3										
2250.800	A	5	0.33	5.81	2-2										
2246.332	A	3	0.32	5.82	1-1										
*2246.65	A	1?	0.32	5.81	1-2										
Vac							Air								
1677.88	A	3	0.39	7.75	5-4	$a^3F - 1^o$ (17)	2514.633	A	200	1.12	6.03	4-5	$a^3F - y^3G^o$ (21)		
1672.44	A	15	0.37	7.75	4-4		2506.215	A	200	1.09	6.02	3-4			
							2503.018	A	180	1.07	6.00	2-3			
1636.02	A	40	0.39	7.94	5-5	$a^3F - y^3F^o$ (18)	2522.392	A	6	1.12	6.02	4-4	$a^3F - y^3F^o$ (22)		
1637.77	A	50	0.37	7.90	4-4		2515.722	A	9	1.09	6.00	3-3			
1639.13	A	40	0.35	7.88	3-3		2488.616	A	6	1.12	6.08	4-4			
1640.15	A	35	0.33	7.86	2-2		2646.65	A	1	1.07	6.07	2-2			
1640.86	A	30	0.32	7.85	1-1		2476.963	A	1	1.09	6.07	3-2			
*1643.02	A	30	0.39	7.90	5-4		2472.870	A	5	1.09	6.08	3-4			
*1643.43	A	30	{0.37	7.88	4-3		2464.094	A	15	1.07	6.08	2-3			
*1643.02	A	30		0.35	7.86		3-2								
*1643.02	A	30	0.33	7.85	2-1		2468.654	A	8	1.12	6.12	4-5		$a^3F - z^3H^o$ (23)	
1630.82	A	20	0.37	7.94	4-5		2434.94	A	5?	1.09	6.16	3-2		$a^3F - z^3D^o$ (24)	
1633.51	A	25	0.35	7.90	3-4	2423.030	A	6	1.07	6.16	2-2				
1635.86	A	20	0.33	7.88	2-3	2380.910	A	120	1.12	6.31	4-3	$a^3F - y^3D^o$ (25)			
1637.93	A	10	0.32	7.86	1-2	2383.995	A	80	1.09	6.27	3-2				
							2389.696	A	100	1.07	6.23	2-1			
							2366.490	A	25	1.09	6.31	3-3			
							2372.584	A	20	1.07	6.27	2-2			
							2355.232	A	4	1.07	6.31	2-3			
							2294.992	A	40	1.12	6.50	4-4	$a^3F - z^3F^o$ (26)		
							2295.504	A	20	1.09	6.47	3-3			
							*2292.588	A	30	1.07	6.45	2-2			
							2309.072	A	10	1.12	6.47	4-3			
							2303.238	A	10	1.09	6.45	3-2			
							*2281.601	A	60	1.09	6.50	3-4			
							2284.920	A	15	1.07	6.47	2-3			
							2289.219	A	70	1.12	6.51	4-3	$a^3F - z^3D^o$ (27)		
							2279.376	A	15	1.09	6.51	3-2			
							2273.89	A	2	1.07	6.49	2-1			
							2275.883	A	7	1.09	6.51	3-3			

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2229.985	A	80	1.12	6.66	4-3	$a^3F - w^3D^\circ$	2446.697	A	30	1.47	6.51	2-3	$a^3P - x^3D^\circ$
2220.214	A	100	1.09	6.65	3-2	(28)	2427.316	A	20	1.42	6.51	1-2	(41)
m2216.05	P	V III	1.07	6.64	2-1		m2420.07	P	V I	1.39	6.49	0-1	
*2217.32	A	8	1.09	6.66	3-3		2450.734	A	20	1.47	6.51	2-2	
2210.305	A	8	1.07	6.65	2-2		2432.976	A	20	1.42	6.49	1-1	
							2456.508	A	3	1.47	6.49	2-1	
2168.08	A	10	1.12	6.82	4-5	$a^3F - x^3G^\circ$	2408.430	A	15	1.39	6.52	0-1	$a^3P - z^3P^\circ$
Vac													(42)
1883.98	A	20	1.12	7.68	4-4	$a^3F - w^3F^\circ \dagger$	2379.149	A	100	1.47	6.66	2-3	$a^3P - w^3D^\circ$
1876.47	A	10	1.09	7.67	3-3	(30)	2360.334	A	50	1.42	6.65	1-2	(43)
1871.08	A	12	1.07	7.66	2-2		2354.656	A	20	1.39	6.64	0-1	
							m2382.48	P	V III	1.47	6.65	2-2	
1813.87	A	8	1.12	7.93	4-5	$a^3F - w^3G^\circ \dagger$	2366.883	A	20	1.42	6.64	1-1	
						(31)	2389.144	A	2	1.47	6.64	2-1	
1748.99	A	5	1.07	8.13	2-1	$a^3F - x^3D^\circ$							
						(32)	2335.326	A	10	1.47	6.75	2-2	$a^3P - x^3P^\circ$
1693.49	A	12	1.12	8.41	4-4	$a^3F - v^3F^\circ \dagger$	2313.939	A	9	1.42	6.75	1-1	(44)
1693.09	A	10	1.09	8.38	3-3	(33)	2335.204	A	2	1.47	6.75	2-1	
1692.11	A	10	1.07	8.36	2-2		2308.831	A	5	1.42	6.77	1-0	
							2314.055	A	3	1.42	6.75	1-2	
1670.90	A	5	1.12	8.51	4-3	$a^3F - u^3D^\circ \dagger$	2302.256	A	5	1.39	6.75	0-1	
1667.88	A	5	1.09	8.49	3-2	(34)							
1663.34	A	3	1.07	8.49	2-1		2248.748	A	10	1.47	6.87	2-1	$a^3P - y^3S^\circ$
													(45)
Air							*2765.676	A	150+H I	1.57	6.03	6-5	$a^3H - y^3G^\circ$
2870.111	A	9	1.47	5.77	2-2	$a^3P - z^3P^\circ$	2768.566	A	100	1.56	6.02	5-4	(46)
2842.043	A	2	1.42	5.76	1-1	(35)	2774.28	A	100	1.55	6.00	4-3	
2874.205	A	5	1.47	5.76	2-1		2759.22	A	1	1.56	6.03	5-5	
2850.477	A	1	1.42	5.75	1-0		2762.714	A	3	1.55	6.02	4-4	
2838.053	A	10	1.42	5.77	1-2								
2824.444	A	4	1.39	5.76	0-1		2727.929	A	6	1.56	6.08	5-4	$a^3H - y^3F^\circ$
*2809.184	A	1	1.42	5.81	1-2	$a^3P - y^3D^\circ$	2726.544	A	40	1.55	6.08	4-3	(47)
2791.50	A	7	1.39	5.82	0-1	(36)	2722.258	A	3	1.55	6.08	4-4	
2840.593	A	6	1.47	5.81	2-2								
2808.701	A	4	1.42	5.82	1-1		2710.17	A	15	1.57	6.12	6-5	$a^3H - z^3H^\circ$
2804.10	A	10	1.47	5.82	2-1								(48)
2815.032	A	5	1.42	5.81	1-0		2694.47	A	5	1.56	6.14	5-4	$a^3H - z^3G^\circ$
													(49)
2551.724	A	15	1.47	6.31	2-3	$a^3P - y^3D^\circ$	2527.903	A	250	1.57	6.45	6-6	$a^3H - y^3H^\circ$
2546.311	A	5	1.42	6.27	1-2	(37)	2528.833	A	220	1.56	6.44	5-5	(50)
2572.096	A	2	1.47	6.27	2-2		2528.466	A	200	1.55	6.43	4-4	
2566.033	A	7	1.42	6.23	1-1		2534.263	A	9	1.57	6.44	6-5	
2592.215	A	4	1.47	6.23	2-1		2533.365	A	15	1.56	6.43	5-4	
2549.272	A	120	1.47	6.31	2-2	$a^3P - y^3P^\circ$	2522.513	A	20	1.56	6.45	5-6	
2548.685	A	60	1.42	6.26	1-1	(38)	*2523.953	A	100	1.55	6.44	4-5	
2574.520	A	60	1.47	6.26	2-1								
2553.668	A	40	1.42	6.25	1-0		2497.002	A	4	1.56	6.50	5-4	$a^3H - x^3F^\circ$
*2523.953	A	100	1.42	6.31	1-2		2508.854	A	4	1.55	6.47	4-3	(51)
2534.519	A	80	1.39	6.26	0-1								
2482.307	A	150	1.47	6.44	2-1	$a^3P - z^3S^\circ$	2461.495	A	40	1.57	6.58	6-7	$a^3H - z^3I^\circ$
2458.288	A	50	1.42	6.44	1-1	(39)	2471.119	A	25	1.56	6.55	5-6	(52)
2445.107	A	6	1.39	6.44	0-1		2478.621	A	20	1.55	6.53	4-5	
							2476.295	A	5h	1.57	6.55	6-6	
2469.388	A	5	1.47	6.47	2-3	$a^3P - x^3F^\circ$	2407.592	A	5	1.56	6.68	5-4	$a^3H - y^3G^\circ$
2478.340	A	1	1.47	6.45	2-2	(40)							(53)

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2346.868	A	25	1.55	6.81	4-3	$a^3H-y^1F^o$ (54)	Air 2542.935	A	15	1.67	6.52	2-1	$b^3F-z^1P^o$ (70)
2352.177	A	100	1.57	6.82	6-5	$a^3H-x^3G^o$ (55)	2479.518	A	180	1.68	6.66	4-3	$b^3F-w^3D^o$ (71)
2342.142	A	60+h	1.56	6.83	5-4		2479.043	A	200	1.67	6.65	3-2	
2335.480	A	40	1.55	6.83	4-3		2483.064	A	120	1.67	6.64	2-1	
2347.507	A	8	1.56	6.82	5-5		2475.451	A	20	1.67	6.66	3-3	
2337.956	A	4	1.55	6.83	4-4		2475.865	A	30	1.67	6.65	2-2	
2341.358	A	4	1.57	6.84	6-6	$a^3H-z^1I^o$ (56)	2406.989	A	5	1.68	6.81	4-3	$b^3F-y^1F^o$ (72)
2336.098	A	30	1.57	6.85	6-5	$a^3H-y^1H^o$ (57)	2400.166	A	4	1.67	6.81	2-3	
Vac 1938.70	A	8	1.57	7.94	6-5	$a^3H-y^3F^o$ (58)	2403.240	A	9	1.68	6.82	4-5	$b^3F-x^3G^o$ (73)
*1945.35§§	A	30	1.56	7.90	5-4		2393.814	A	8	1.67	6.83	3-4	
1940.86	A	40	1.57	7.93	6-5	$a^3H-w^3G^o$ (59)	2388.260	A	5	1.67	6.83	2-3	
1941.40	A	30	1.56	7.92	5-4		2397.622	A	6	1.68	6.83	4-4	
1941.27	A	30	1.55	7.91	4-3		2391.226	A	10h	1.67	6.83	3-3	
1937.68	A	7	1.56	7.93	5-5		2058.34	A	40	1.68	7.68	4-4	$b^3F-w^3F^o$ (74)
1938.50	A	10	1.55	7.92	4-4		2057.36	A	25	1.67	7.67	3-3	
Air 2967.545	A	5	1.68	5.84	4-5	$b^3F-z^3H^o$ (60)	2057.20	A	15	1.67	7.66	2-2	
*2983.009	A	10	1.67	5.81	3-4		2055.55	A	8	1.67	7.68	3-4	
2836.527	A	80	1.68	6.03	4-5	$b^3F-y^3G^o$ (61)	2055.15	A	5	1.67	7.67	2-3	
2841.039	A	50	1.67	6.02	3-4		Vac 1833.58	A	10	1.68	8.41	4-4	$b^3F-v^3F^o†$ (75)
2849.055	A	40	1.67	6.00	2-3		1839.54	A	20	1.67	8.38	3-3	
2803.469	A	150	1.68	6.08	4-4	$b^3F-y^3F^o$ (62)	1843.43	A	5	1.67	8.36	2-2	
2802.796	A	100	1.67	6.08	3-3		1807.15	A	1	1.68	8.51	4-3	$b^3F-u^3D^o$ (76)
2799.451	A	100	1.67	6.07	2-2		*1809.81	A	8d?	1.67	8.49	3-2	
2808.023	A	4	1.68	6.08	4-3		1809.36	A	10e	1.67	8.49	2-1	
2780.09	A	5+H	1.68	6.12	4-3	$b^3F-z^1F^o$ (63)	Air 2777.748	A	80	1.70	6.14	3-2	$a^3P-z^3S^o$ (77)
2774.976	A	30	1.67	6.12	3-3		2766.460	A	60	1.68	6.14	2-2	
2770.99	A	4	1.67	6.12	2-3		2760.122	A	40	1.67	6.14	1-2	
2768.150	A	15	1.68	6.14	4-4	$b^3F-z^1G^o$ (64)	2544.29	A	10H	1.67	6.52	1-1	$a^3P-z^1P^o$ (78)
*2758.53	A	9H1	1.67	6.14	2-2	$b^3F-z^3S^o$ (65)	2039.29	A	60	1.70	7.75	3-4	a^3P-1^o (79)
2745.893	A	6	1.67	6.16	2-2	$b^3F-z^1D^o$ (66)	Vac 1907.79	A	50	1.70	8.17	3-4	$a^3P-x^3D^o$ (80)
2667.532	A	4	1.68	6.31	4-3	$b^3F-y^3D^o†$ (67)	1908.32	A	40h	1.68	8.15	2-3	
2703.15	A	3	1.67	6.23	2-1		1909.36	A	40	1.67	8.13	1-2	
*2560.149	A	4	1.68	6.50	4-4	$b^3F-x^3F^o$ (68)	1913.70	A	50	1.70	8.15	3-3	
2577.682	A	40	1.68	6.47	4-3		1912.39	A	40	1.68	8.13	2-2	
2583.007	A	20	1.67	6.45	3-2		1911.88	A	40	1.67	8.13	1-1	
2552.960	A	60	1.68	6.51	4-3	$b^3F-x^3D^o$ (69)	1917.79	A	15	1.70	8.13	3-2	
2553.028	A	40	1.67	6.51	3-2		1914.91	A	15	1.68	8.13	2-1	
2555.905	A	40	1.67	6.49	2-1		1913.10	A	20	1.67	8.12	1-0	
m2548.65	P	V II	1.67	6.51	3-3		Air 2923.340	A	20	1.81	6.03	5-5	$a^3G-y^3G^o$ (81)
2549.653	A	10	1.67	6.51	2-2		2925.288	A	15	1.80	6.02	4-4	
							2930.132	A	25	1.79	6.00	3-3	
							2933.833	A	15	1.81	6.02	5-4	
							2938.259	A	20	1.80	6.00	4-3	
							*2914.87 §	A	10	1.80	6.03	4-5	
							2917.230	A	7	1.79	6.02	3-4	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2888.244	A	80	1.81	6.08	5-4	$a^1G - y^1F^o$	*1869.47	A	50	1.81	8.41	5-4	$a^1G - y^1F^o$
*2884.776	A	150	1.80	6.08	4-3	(82)	1874.45	A	12	1.80	8.38	4-3	(97)
2877.689	A	60	1.79	6.07	3-2		1877.00	A	10	1.79	8.36	3-2	
m2879.97	P	V II	1.80	6.08	4-4		1865.99	A	3	1.80	8.41	4-4	
2876.939	A	9	1.79	6.08	3-3								
							1799.47	A	12	1.81	8.67	5-5	$a^1G - y^1G^o \uparrow$
							1806.49	A	8h	1.80	8.63	4-4	(98)
2855.298	A	40	1.80	6.12	4-3	$a^1G - z^1F^o$	*1809.81	A	8d?	1.81	8.63	5-4?	
						(83)							
2861.401	A	5	1.81	6.12	5-5	$a^1G - z^1H^o$	1613.20	A	15	1.81	9.46	5-4	$a^1G - u^1F^o$
						(84)	1617.35	A	10	1.80	9.43	4-3	(99)
							1619.18	A	10	1.79	9.41	3-2	
2850.765	A	20	1.81	6.14	5-4	$a^1G - z^1G^o$							
2842.699	A	4	1.80	6.14	4-4	(85)	Air						
							2798.755	A	80	2.04	6.45	5-6	$b^1G - y^1H^o$
							2797.795	A	70	2.03	6.44	4-5	(100)
2821.124	A	15	1.79	6.16	3-2	$a^1G - z^1D^o$	2797.017	A	60	2.02	6.43	3-4	
						(86)	2806.544	A	4	2.04	6.44	5-5	
2736.69	A	10	1.80	6.31	4-3	$a^1G - y^1D^o \uparrow$	2581.839	A	4	2.03	6.81	4-3	$b^1G - y^1F^o$
						(87)	2576.478	A	20	2.02	6.81	3-3	(101)
*2658.97	A	30	1.81	6.45	5-6	$a^1G - y^1H^o$	2584.951	A	80	2.04	6.82	5-5	$b^1G - z^1G^o \uparrow$
			1.80	6.44	4-5	(88)	2571.059	A	50	2.03	6.83	4-4	(102)
2657.295	A	10	1.79	6.43	3-4		2562.760	A	30	2.02	6.83	3-3	
2630.665	A	150	1.81	6.50	5-4	$a^1G - z^1F^o$	2578.451	A	8	2.04	6.83	5-4	
2642.212	A	80	1.80	6.47	4-3	(89)	2568.065	A	3	2.03	6.83	4-3	
2645.840	A	80	1.79	6.45	3-2								
2623.792	A	15+H	1.80	6.50	4-4		2565.543	A	15	2.04	6.85	5-5	$b^1G - y^1H$
2635.640	A	10	1.79	6.47	3-3								(103)
2616.24	A	40	1.80	6.51	4-3	$a^1G - z^1D^o$	2190.22	A	30	2.04	7.68	5-4	$b^1G - w^1F^o \uparrow$
2614.395	A	10	1.79	6.51	3-2	(90)	2186.94	A	20	2.03	7.67	4-3	(104)
*2609.80	A	5	1.79	6.51	3-3		*2185.39	A	50	2.02	7.66	3-2	
2463.157	A	3	1.80	6.81	4-3	$a^1G - y^1F^o$	2095.94	A	25	2.04	7.93	5-5	$b^1G - w^1G^o \uparrow$
2457.446	A	30	1.79	6.81	3-3	(91)	2095.37	A	15	2.03	7.92	4-4	(105)
							2095.05	A	15	2.02	7.91	3-3	
2465.270	A	150	1.81	6.82	5-5	$a^1G - z^1G^o$	Vac						
2453.346	A	80	1.80	6.83	4-4	(92)	1937.44	A	60	2.04	8.41	5-4	$b^1G - y^1F^o$
2444.967	A	60	1.79	6.83	3-3		1942.35	A	40	2.03	8.38	4-3	(106)
2459.358	A	15	1.81	6.83	5-4		1945.64	A	30	2.02	8.36	3-2	
2450.619	A	9	1.80	6.83	4-3		1933.28	A	10	2.03	8.41	4-4	
2459.233	A	5	1.80	6.82	4-5		1939.32	A	8	2.02	8.38	3-3	
2447.608	A	20	1.81	6.85	5-5	$a^1G - y^1H^o$	1903.86	A	5?	2.03	8.51	4-3?	$b^1G - u^1D^o$
2441.664	A	4h	1.80	6.85	4-5	(93)							(107)
2103.70	A	80	1.81	7.68	5-4	$a^1G - w^1F^o \uparrow$	1862.37	A	30	2.04	8.67	5-5	$b^1G - y^1G^o$
2101.17	A	50	1.80	7.67	4-3	(94)	*1869.47	A	50	2.03	8.63	4-4	(108)
2099.16	A	30	1.79	7.66	3-2		1876.06	A	20	2.02	8.60	3-3	
							1873.39	A	10	2.04	8.63	5-4	
*2014.18	A	90	1.81	7.94	5-5	$a^1G - y^1F^o$	1878.90	A	10	2.03	8.60	4-3	
2025.47	A	15	1.79	7.88	3-3	(95)	1858.50	A	2	2.03	8.67	4-5	
2024.84	A	0??	1.81	7.90	5-4?		1866.68	A	5	2.02	8.63	3-4	
2010.15	A	5h	1.80	7.94	4-5								
							1663.60	A	15	2.04	9.46	5-4	$b^1G - u^1F^o$
*2016.53	A	60	1.81	7.93	5-5	$a^1G - w^1G^o$	1667.66	A	10	2.03	9.43	4-3	(109)
			1.80	7.92	4-4	(96)	1670.01	A	10	2.02	9.41	3-2	
*2015.74	A	20	1.79	7.91	3-3		1660.53	A	8	2.03	9.46	4-4	
2020.54	A	10	1.81	7.92	5-4		1665.42	A	8e	2.02	9.43	3-3	
2019.47	A	10	1.80	7.91	4-3								
*2012.64	A	10	1.79	7.92	3-4								

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
*2685. 138§	A	20	2. 21	6. 81	4-3	$a^1G - y^1F^\circ$ (110)
2680. 470	A	8	2. 21	6. 82	4-5	$a^1G - x^1G^\circ$
2670. 237	A	40	2. 21	6. 83	4-3	(111)
2659. 60	A	25	2. 21	6. 85	4-5	$a^1G - y^1H^\circ$ (112)
2155. 61	A	15	2. 21	7. 94	4-5	$a^1G - y^1F^\circ$ (113)
2087. 92	A	20	2. 21	8. 12	4-4	$a^1G - x^1G^\circ$ (114)
2065. 76	A	40	2. 21	8. 19	4-3	$a^1G - x^1F^\circ$ (115)
Vac						
1885. 90	A	10	2. 21	8. 76	4-5	$a^1G - x^1H^\circ$ (116)
1838. 86	A	25	2. 21	8. 92	4-4	$a^1G - w^1G^\circ$ (117)
*2914. 298§	A	40	2. 27	6. 50	3-4	$a^1D - x^1F^\circ$
2931. 859	A	10	2. 26	6. 47	2-3	(118)
2942. 37	A	15	2. 26	6. 45	1-2	
2937. 030	A	15	2. 27	6. 47	3-3	
m2944. 49	P	V II	2. 26	6. 45	2-2	
2904. 985	A	15	2. 27	6. 51	3-3	$a^1D - x^1D^\circ$
2905. 609	A	15	2. 26	6. 51	2-2	(119)
2911. 654	A	7	2. 26	6. 49	1-1	
2913. 716	A	2	2. 26	6. 49	2-1	
2899. 936	A	4	2. 26	6. 51	2-3	
2903. 548	A	3	2. 26	6. 51	1-2	
2810. 272	A	100	2. 27	6. 66	3-3	$a^1D - w^1D^\circ$
2810. 158	A	60	2. 26	6. 65	2-2	(120)
2817. 506	A	60	2. 26	6. 64	1-1	
2814. 903	A	15	2. 27	6. 65	3-2	
2819. 444	A	20	2. 26	6. 64	2-1	
2805. 544	A	30	2. 26	6. 66	2-3	
2808. 237	A	25	2. 26	6. 65	1-2	
2717. 464	A	5	2. 27	6. 81	3-3	$a^1D - y^1F^\circ$ (121)
*2560. 149	A	4	2. 26	7. 08	2-2	$a^1D - y^1D^\circ$ (122)
2281. 235	A	60	2. 27	7. 68	3-4	$a^1D - w^1F^\circ$
2280. 338	A	60	2. 26	7. 67	2-3	(123)
*2281. 601	A	60	2. 26	7. 66	1-2	
2283. 469	A	7	2. 27	7. 67	3-3	
2282. 863	A	6	2. 26	7. 66	2-2	
2161. 48	A	20	2. 27	7. 98	3-3	$a^1D - y^1D^\circ$
2149. 386	A	8	2. 26	8. 00	2-2	(124)
2142. 40	A	3	2. 26	8. 02	1-1	
2107. 40	A	10h	2. 27	8. 12	3-4	$a^1D - x^1G^\circ$ (125)

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2007. 66	A	25	2. 27	8. 41	3-4	$a^1D - y^1F^\circ$
*2015. 02§	A	15	2. 26	8. 38	2-3	(126)
2020. 83	A	15	2. 26	8. 36	1-2	
2017. 46	A	2	2. 27	8. 38	3-3	
2021. 83	A	5	2. 26	8. 36	2-2	
Vac						
1976. 62	A	60	2. 27	8. 51	3-3	$a^1D - w^1D^\circ$
1980. 04	A	40	2. 26	8. 49	2-2	(127)
1980. 59	A	25	2. 26	8. 49	1-1	
1982. 41	A	8	2. 27	8. 49	3-2	
1981. 53	A	8	2. 26	8. 49	2-1	
1739. 33	A	10l	2. 27	9. 36	3-3?	$a^1D - t^1D^\circ$ (128)
1722. 62	A	10e	2. 27	9. 43	3-3	$a^1D - 2^\circ$ (129)
Air						
2960. 777	A	6	2. 36	6. 53	4-5	$b^1G - x^1I^\circ$ (130)
2871. 543	A	3	2. 36	6. 66	4-3	$b^1G - w^1D^\circ$ (131)
2853. 761	A	4	2. 36	6. 68	4-4	$b^1G - y^1G^\circ$ (132)
2774. 718	A	60	2. 36	6. 81	4-3	$b^1G - y^1F^\circ$ (133)
2769. 731	A	20	2. 36	6. 82	4-5	$b^1G - x^1G^\circ$
2758. 810	A	15	2. 36	6. 83	4-3	(134)
*2747. 462§	A	80	2. 36	6. 85	4-5	$b^1G - y^1H^\circ$ (135)
2141. 70	A	4h?	2. 36	8. 12	4-4	$b^1G - x^1G^\circ$ (136)
*2118. 43	A	30h	2. 36	8. 19	4-3	$b^1G - x^1F^\circ$ (137)
Vac						
1978. 96	A	20	2. 36	8. 60	4-3	$b^1G - y^1G^\circ$ (138)
1929. 61	A	60	2. 36	8. 76	4-5	$b^1G - x^1H^\circ$ (139)
1880. 43	A	40e?	2. 36	8. 92	4-4	$b^1G - w^1G^\circ$ (140)
Air						
2971. 998	A	4	2. 37	6. 52	1-1	$b^1P - x^1P^\circ$
2971. 571	A	8	2. 37	6. 52	0-1	(141)
2873. 180	A	30	2. 36	6. 66	2-3	$b^1P - w^1D^\circ$
2880. 802	A	15	2. 37	6. 65	1-2	(142)
2890. 144	A	7	2. 37	6. 64	0-1	
2878. 028	A	7	2. 36	6. 65	2-2	
2890. 553	A	5	2. 37	6. 64	1-1	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2809.513	A	15	2.36	6.75	2-2	$b^1P-x^1P^o$	2864.517	A	30	2.50	6.81	4-3	$b^1H-y^1F^o$
2811.982	A	5	2.37	6.75	1-1	(143)							(158)
2804.443	A	4	2.37	6.77	1-0		2869.131	A	150	2.51	6.82	6-5	$b^1H-x^1G^o$
2812.164	A	6	2.37	6.75	1-2		2854.335	A	120	2.50	6.83	5-4	(159)
2811.597	A	7	2.37	6.75	0-1		2847.573	A	100	2.50	6.83	4-3	
							2862.310	A	20	2.50	6.82	5-5	
2776.24	A	6H	2.36	6.81	2-3	$b^1P-y^1F^o$	2851.260	A	15	2.50	6.83	4-4	
						(144)							
2198.524	A	20	2.36	7.98	2-3	$b^1P-v^1D^o$	2845.241	A	50	2.51	6.85	6-5	$b^1H-y^1H^o$
2190.48	A	8	2.37	8.00	1-2	(145)	2838.531	A	4	2.50	6.85	5-5	(160)
2184.17	A	5	2.37	8.02	0-1		2835.47	A	4	2.50	6.85	4-5	
*2049.67	A	5h	2.36	8.38	2-3?	$b^1P-v^1F^o$	2278.972	A	40	2.51	7.93	6-5	$b^1H-w^1G^o$
						(146)	2279.762	A	20	2.50	7.92	5-4	(161)
							*2281.601	A	60	2.50	7.91	4-3	
2006.88	A	80	2.36	8.51	2-3	$b^1P-u^1D^o$	2004.77	A	90	2.51	8.67	6-5	$b^1H-v^1G^o$
*2014.18	A	90	2.37	8.49	1-2	(147)	*2014.18	A	90	2.50	8.63	5-4	(162)
2015.56	A	20	2.37	8.49	0-1		2023.56	A	50	2.50	8.60	4-3	
2012.8	A	20	2.36	8.49	2-2		2001.43	A	10	2.50	8.67	5-5	
*2015.74	A	20	2.37	8.49	1-1		*2012.64	A	10	2.50	8.63	4-4	
							Vac						
2775.770	A	70	2.37	6.82	6-5	$a^1I-x^1G^o$	1972.62	A	20	2.50	8.76	4-5	$b^1H-x^1H^o$
						(148)							(163)
2760.710	A	60	2.37	6.84	6-6	$a^1I-x^1I^o$	1921.24	A	15he?	2.50	8.92	4-4	$b^1H-w^1G^o$
						(149)							(164)
2753.407	A	150	2.37	6.85	6-5	$a^1I-y^1H^o$	*1780.52	A	5h	2.50	9.43	4-3	b^1H-2^o
						(150)							(165)
							Air						
2871.463	A	4	2.46	6.75	0-1	$a^1S-x^1P^o$	2932.323	A	60	2.55	6.75	3-2	$b^1D-x^1P^o$
						(151)	2931.624	A	20	2.55	6.75	2-1	(166)
2756.38	A	4h	2.46	6.93	0-1	$a^1S-y^1P^o$	2915.330	A	30	2.53	6.77	1-0	
						(152)							
							2895.609	A	4	2.55	6.81	2-3	$b^1D-y^1F^o$
													(167)
2976.72	P		2.51	6.66	2-3	$c^1P-w^1D^o$	2878.299	A	3	2.55	6.83	2-3	$b^1D-x^1I^o$
2959.55	A	1	2.48	6.65	1-2	(153)							(168)
2981.924	A	15	2.51	6.65	2-2		2852.540	A	30	2.55	6.87	2-1	$b^1D-y^1S^o$
2969.846	A	5	2.48	6.64	1-1		2844.833	A	3	2.53	6.87	1-1	(169)
2992.378	A	2	2.51	6.64	2-1								
2908.44	A	20	2.51	6.75	2-2	$c^1P-x^1P^o$	2273.616	A	9	2.55	7.97	2-2	$b^1D-z^1D^o$
2886.967	A	10	2.48	6.75	1-1	(154)							(170)
2879.013	A	2	2.48	6.77	1-0		*2273.024	A	40h	2.55	7.98	3-3	$b^1D-v^1D^o$
2887.158	A	8	2.48	6.75	1-2		2262.404	A	9h	2.55	8.00	2-2	(171)
m2892.57	P	V II	2.49	6.75	0-1		2251.114	A	6	2.53	8.02	1-1	
2830.402	A	40	2.51	6.87	2-1	$c^1P-y^1S^o$	2103.53	A	30	2.55	8.41	3-4	$b^1D-v^1F^o$
m2810.24	P	V II	2.48	6.87	1-1	(155)	2114.03	A	30	2.55	8.38	2-3	(172)
2815.547	A	3	2.49	6.87	0-1		2117.293	A	25	2.53	8.36	1-2	
2101.86	A	20	2.51	8.38	2-3	$c^1P-v^1F^o$	2114.30	A	15	2.55	8.38	3-3	
2098.00	A	5d?	2.48	8.36	1-2?	(156)	2121.54	A	10	2.55	8.36	2-2	
2109.27	A	8	2.51	8.36	2-2								
*2056.89	A	15	2.51	8.51	2-3	$c^1P-u^1D^o$	2068.80	A	60	2.55	8.51	3-3	$b^1D-u^1D^o$
2052.38	A	10	2.48	8.49	1-2	(157)	2074.87	A	25	2.55	8.49	2-2	(173)
*2056.89	A	15	2.49	8.49	0-1		2072.43	A	30	2.53	8.49	1-1	
2063.12	A	20	2.51	8.49	2-2		2075.13	A	15	2.55	8.49	3-2	
							2076.52	A	0??	2.55	8.49	2-1	
							2068.54	A	15	2.55	8.51	2-3	
							2070.79	A	15	2.53	8.49	1-2	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1814.93	A	5	2.55	9.35	2-1	$b^1D - t^1D^{\circ\uparrow}$ (174)	Air 2566.602	A	15	3.31	8.12	3-4	$a^1F - x^1G^{\circ}$ (193)
1785.07	A	5	2.55	9.46	3-4	$b^1D - u^1F^{\circ\uparrow}$	2090.33	A	25	3.31	9.22	3-3	$a^1F - w^1F^{\circ}$
1793.13	A	3	2.55	9.43	2-3	(175)	Vac 1924.87	A	30	3.31	9.73	3-2	$a^1F - w^1D^{\circ}$ (195)
1792.49	A	5	2.55	9.43	2-3	$b^1D - 2^{\circ}$ (176)	Air 2948.076	A	60	3.74	7.93	4-5	$c^1F - w^1G^{\circ}$ (196)
Air 2926.442	A	40	2.59	6.81	2-3	$a^1D - y^1F^{\circ}$ (177)	2955.584	A	30	3.74	7.92	3-4	
2840.825	A	3	2.59	6.93	2-1	$a^1D - y^1P^{\circ}$ (178)	2958.61	A	20	3.74	7.91	2-3	
*2292.588	A	30	2.59	7.97	2-2	$a^1D - x^1D^{\circ}$ (179)	2956.645	A	2	3.74	7.92	4-4	
2130.42	A	5	2.59	8.38	2-3	$a^1D - v^1F^{\circ}$ (180)	2962.014	A	5	3.74	7.91	3-3	
Vac 1862.76	A	25	2.59	9.22	2-3	$a^1D - w^1F^{\circ}$ (181)	2915.875	A	40	3.74	7.98	4-3	$c^1F - v^1D^{\circ}$ (197)
1729.78	A	10e	2.59	9.73	2-2	$a^1D - w^1D^{\circ}$ (182)	2897.899	A	20	3.74	8.00	3-2	
Air 2949.172	A	40	2.75	6.93	1-1	$a^1P - y^1P^{\circ}$ (183)	2884.064	A	6	3.74	8.02	2-1	
2850.685	A	25	2.75	7.08	1-2	$a^1P - y^1D^{\circ}$ (184)	*2750.29	A	8H1	3.74	8.23	4-3?	$c^1F - y^1G^{\circ}$ (198)
2362.632	A	20	2.75	7.97	1-2	$a^1P - x^1D^{\circ}$ (185)	*2782.95	A	6H	3.74	8.18	3-2?	
2539.20	A	20H1	2.89	7.75	5-4	$a^1H - 1^{\circ}$ (186)	2642.72	A	6	3.74	8.41	4-4	$c^1F - v^1F^{\circ}$ (199)
2357.810	A	60	2.89	8.12	5-4	$a^1H - x^1G^{\circ}$ (187)	2668.01	A	10H	3.74	8.36	2-2	
*2044.285	A	5	2.89	8.92	5-4	$a^1H - w^1G^{\circ}$ (188)	2588.128	A	3	3.74	8.51	4-3	$c^1F - u^1D^{\circ}$ (200)
2537.619	A	20	3.11	7.97	2-2	$b^1D - x^1D^{\circ}$ (189)	*2597.21	A	6h	3.74	8.49	3-2	
2431.59	A	4	3.11	8.19	2-3	$b^1D - x^1F^{\circ}$ (190)	2195.69	A	15	3.74	9.36	4-3	$c^1F - t^1D^{\circ\uparrow}$ (201)
*2782.95	A	6H	3.31	7.75	3-4	$a^1F - 1^{\circ}$ (191)	2199.443	A	10	3.74	9.35	3-2	
2648.475	A	30	3.31	7.97	3-2	$a^1F - x^1D^{\circ}$ (192)	2199.660	A	7	3.74	9.35	2-1?	
							2170.05	A	10H	3.74	9.43	4-3	$c^1F - u^1F^{\circ}$ (202)
							2167.69	A	8	3.74	9.43	2-3	
							2051.79	A	30h	3.74	9.76	4-3	$c^1F - 3^{\circ}$ (203)
							2051.27	A	5h	3.74	9.76	3-3	
							*2049.67	A	5h	3.74	9.76	2-3	
							m2941.22	P	V II	3.78	7.98	4-3	$d^1F - v^1D^{\circ}$ (204)
							2926.35	A	10h	3.78	8.00	3-2	
							2918.21	A	15h	3.79	8.02	2-1	
							2943.631	A	3	3.78	7.98	3-3	
							2929.017	A	4	3.79	8.00	2-2	
							*2844.22	A	4H1	3.78	8.12	3-4	$d^1F - x^1G^{\circ}$ (205)
							*2750.29	A	8H1	3.78	8.27	4-4?	$d^1F - y^1G^{\circ\uparrow}$ (206)
							2663.526	A	4h	3.78	8.41	4-4	$d^1F - v^1F^{\circ\uparrow}$ (207)
							m2682.81	P	V II	3.78	8.38	3-3	
							2697.201	A	10	3.79	8.36	2-2	
							2210.029	A	10	3.78	9.36	4-3	$d^1F - t^1D^{\circ}$ (208)
							2215.786	A	9h	3.78	9.35	3-2	
							2219.408	A	3	3.79	9.35	2-1?	
							2211.38	A	2h?	3.78	9.36	3-3	
							*2217.32	A	8	3.79	9.35	2-2	
							2171.840	A	25	3.78	9.46	4-4	$d^1F - u^1F^{\circ\uparrow}$ (209)
							*2185.39	A	50	3.78	9.43	3-3	
							2194.84	A	8	3.79	9.41	2-2	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2185.96	A	40	3.79	9.43	2-3	$d^3F - 2^{\circ}$ (210)	*2795.39	A	3H	4.56	8.97	3-2?	$z^3F^{\circ} - e^3D$ (217)
							2792.45	A	6H1	4.59	9.01	4-4?	
2077.58	A	15H	3.79	9.73	2-2	$d^3F - w^1D^{\circ}$ (211)	*2787.00	A	10H	4.56	8.99	3-3?	
2066.83	A	8h	3.79	9.76	2-3	$d^3F - 3^{\circ}$ (212)	*2765.676	A	150+H1	4.61	9.07	5-6	$z^3F^{\circ} - e^3G$ (218)
							2756.58	A	20H1	4.59	9.06	4-5	
2663.25	A	250H	4.38	9.01	6-7	$z^3G^{\circ} - e^3H$ (213)	2749.48	A	8H	4.56	9.05	3-4	
2655.68	A	200H	4.34	8.99	5-6		2740.98	A	7H1	4.53	9.03	2-3	
2649.37	A	150H	4.31	8.97	4-5		2736.12	A	4H	4.50	9.02	1-2	
2644.363	A	100H1	4.29	8.96	3-4		2772.01	A	60H1	4.61	9.06	5-5	
2640.86	A	80H	4.27	8.94	2-3		2767.10	A	30H1	4.59	9.05	4-4	
2676.33	A	7H	4.38	8.99	6-6		2759.60	A	15H1	4.56	9.03	3-3	
2666.79	A	10H	4.34	8.97	5-5		2749.97	A	7H	4.53	9.02	2-2	
2658.49	A	7H1	4.31	8.96	4-4								
2651.57	A	5H	4.29	8.94	3-3		2781.48	A	100H	4.61	9.05	5-5?	$z^3F^{\circ} - e^3F$ (219)
2676.05	A	9H	4.34	8.96	5-4		2771.41	A	40H1	4.59	9.04	4-4	
							*2787.00	A	10H	4.61	9.04	5-4	
2636.00	A	5H	4.27	8.95	2-1?	$z^3G^{\circ} - e^3P$ (214)							
2616.66	A	10H	4.29	9.01	3-4?	$z^3G^{\circ} - e^3D$ (215)	2800.05	A	4H1	4.59	9.00	3-3	$z^3D^{\circ} - e^3P$ (220)
							2818.52	A	5H1	4.59	8.97	3-2	
2629.72	A	60H	4.38	9.07	6-6	$z^3G^{\circ} - e^3G$ (216)	2825.86	A	50H1	4.63	9.00	4-3	$z^3D^{\circ} - e^3P$ (221)
2615.40	A	40H	4.34	9.06	5-5		2843.82	A	9H1	4.63	8.97	3-2	
2608.00	A	20H	4.31	9.05	4-4		*2844.22	A	4H1	4.61	8.95	2-1	
2603.40	A	15H	4.29	9.03	3-3		2825.02	A	5H1	4.63	9.00	3-3	
2601.08	A	25H	4.27	9.02	2-2		2831.60	A	10H	4.61	8.97	2-2	
2635.43	A	7H	4.38	9.06	6-5		*2835.35	A	6H	4.60	8.95	1-1	
2624.860	A	15H	4.34	9.05	5-4		2830.70	A	3H1	4.59	8.95	0-1	
2617.10	A	9H	4.31	9.03	4-3								
2611.51	A	7H	4.29	9.02	3-2		2822.44	A	80H1	4.63	9.01	4-4?	$z^3D^{\circ} - e^3D$ (222)
*2609.80	A	5	4.34	9.07	5-6		2834.55	A	30H1	4.63	8.99	3-3?	
2598.65	A	2H	4.31	9.06	4-5		2830.97	A	3H1	4.61	8.97	2-2?	
2594.43	A	3h	4.29	9.05	3-4		*2835.35	A	6H	4.63	8.99	4-3?	
m2593.05	P	V III	4.27	9.03	2-3								
							2785.83	A	5H	4.63	9.06	4-5	$z^3D^{\circ} - e^3G$ (223)
							2795.72	A	4H	4.63	9.05	3-4	
							2794.29	A	5H	4.61	9.03	2-3	
							*2795.39	A	3H	4.63	9.05	4-5?	$z^3D^{\circ} - e^3F$ (224)
							2800.95	A	20H1	4.63	9.04	4-4	

Strongest Unclassified Lines of V II

2912.50	A	10H1					2612.26	A	15H				
2822.15	A	20H1					2611.24	A	10H				
2794.83	A	15H					2610.61	A	30H				
2791.63	A	10H					2602.94	A	15H				
2787.95	A	20h					2567.45	A	15H				
2784.25	A	60H					2554.22	A	15H				
2783.94	A	30H1					2554.06	A	10H				
2778.60	A	80H					2542.46	A	20H1				
2755.05	A	10H1					2450.236	A	10h				
2752.11	A	15H1					2438.039	A	10h				
2751.79	A	10H1					2400.892	A	40h				
2734.27	A	15H1					2390.470	A	15h				
2732.17	A	10H1					2382.032	A	60+Fe?				
2723.155	A	10					2372.168	A	15H				
2714.42	A	10H					2330.144	A	12				
2712.21	A	30H1					2283.766	A	40				
2696.51	A	20H					2261.850	A	10h				
2694.65	A	10H					2170.38	A	15				
2684.78	A	15H					2166.15	A	20h				
2673.25	A	50H					2164.38	A	15				
2661.47	A	30H					2163.68	A	20h				
2652.76	A	20H					2151.812	A	50				
2628.75	A	30H					2151.032	A	50				
2622.74	A	50H					2150.835	A	60				
2621.80	A	40H					2133.04	A	60				

Strongest Unclassified Lines of V II—Continued

I A	Ref	Int	I A	Ref	Int	I A	Ref	Int	I A	Ref	Int
Air			Air			Air			Vac		
2126.585	A	25h	2061.56	A	15	2022.66	A	15h	1867.47	A	20
2119.562	A	15	2054.85	A	70	2021.38	A	10h	1828.84	A	50
2119.15	A	40h	2048.75	A	15	2005.88	A	15	1823.61	A	25
2118.84	A	25	2037.83	A	50	2001.65	A	40	1816.30	A	20h
2111.04	A	15	2037.50	A	25	2001.14	A	30	1796.80	A	20
2087.54	A	15	2035.78	A	15	2000.14	A	10h	1794.62	A	50
2079.29	A	10H	2035.06	A	60	Vac			1788.30	A	25
2077.79	A	40H	2033.50	A	10	1992.80	A	30	1760.11	A	25
2076.87	A	60h	2031.40	A	30h	1984.05	A	90	1757.76	A	20
2062.00	A	10	2028.88	A	15	1933.97	A	30	1661.27	A	60
						1919.35	A	20			

V III

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REFERENCE

A H. E. White, Phys. Rev. 33, 672 (1929). W L, I, T

V III

V III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1159.77	A	50	0.07	10.72	4½-5½	a 'F-z 'G°† (1)	1331.94	A	50	2.10	11.36	5½-4½	a 'H-z 'G°† (9)
1163.27	A	30	0.04	10.65	3½-4½		133.09	A	45	2.08	11.32	4½-3½	
1166.47	A	30	0.02	10.60	2½-3½								
1169.28	A	20	0.00	10.56	1½-2½								
1166.58	A	30	0.07	10.65	4½-4½								
Air													
1149.94	A	100	0.07	10.81	4½-4½	a 'F-z 'F°† (2)	2371.04	A	200	5.51	10.72	4½-5½	b 'F-z 'G°† (10)
1151.04	A	90	0.04	10.77	3½-3½		2382.45	A	150	5.47	10.65	3½-4½	
1152.18	A	80	0.02	10.73	2½-2½		2393.54	A	125	5.45	10.60	2½-3½	
1153.19	A	70	0.00	10.71	1½-1½		2404.16	A	100	5.42	10.56	1½-2½	
1154.24	A	70	0.07	10.77	4½-3½		2399.67	A	75	5.51	10.65	4½-4½	
							2407.17	A	80	5.47	10.60	3½-3½	
							2413.89	A	40	5.45	10.56	2½-2½	
1125.71	A	30	0.07	11.04	4½-3½	a 'F-z 'D°† (3)	2330.37	A	100	5.51	10.81	4½-4½	b 'F-z 'F° (11)
1122.11	A	15	0.04	11.04	3½-2½		2331.67	A	75	5.47	10.77	3½-3½	
1123.00	A	15	0.02	11.01	2½-1½		2334.15	A	75	5.45	10.73	2½-2½	
1123.55	A	15	0.00	10.99	1½-½		2337.08	A	75	5.42	10.71	1½-1½	
							2348.22	A	30	5.51	10.77	4½-3½	
1289.42	A	30	1.41	10.98	1½-2½	a 'P-z 'D°† (4)	2347.06	A	30	5.47	10.73	3½-2½	b 'F-z 'D°† (12)
*1292.77	A	20	1.38	10.93	½-1½		2346.28	A	30	5.45	10.71	2½-1½	
							2314.10	A	50	5.47	10.81	3½-4½	
							2318.94	A	40	5.45	10.77	2½-3½	
							2325.07	A	40	5.42	10.73	1½-2½	
1287.88	A	20	1.45	11.04	2½-3½	a 'P-z 'D°† (5)	2232.76	A	70	5.51	11.04	4½-3½	b 'F-z 'D°† (12)
1284.23	A	15	1.43	11.04	1½-2½		2215.86	A	40	5.47	11.04	3½-2½	
							2217.40	A	30	5.45	11.01	2½-1½	
							2218.35	A	30	5.42	10.99	1½-½	
							2217.80	A	25	5.47	11.04	3½-3½	
1313.31	A	30	1.50	10.90	4½-3½	a 'G-z 'F°† (6)	2204.31	A	20	5.45	11.04	2½-2½	b 'F-z 'F°† (13)
1317.25	A	20	1.48	10.85	3½-2½								
1252.12	A	40	1.50	11.36	4½-4½	a 'G-z 'G°† (7)	2595.11	A	170	6.15	10.90	3½-3½	b 'F-z 'F°† (13)
1253.99	A	30	1.48	11.32	3½-3½		2593.07	A	160	6.09	10.85	2½-2½	
							2554.23	A	160	6.15	10.98	3½-2½	
							2548.22	A	150	6.09	10.93	2½-1½	
							2366.27	A	180	6.15	11.36	3½-4½	
1389.79	A	20	2.02	10.90	2½-3½	a 'D-z 'F°† (8)	2358.70	A	180	6.09	11.32	2½-3½	b 'F-z 'G°† (15)

V IV

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REFERENCES

- A H. E. White, Phys. Rev. **33**, 538 (1929). W L, I, T
 B. Edlén, unpublished material (Feb. 1949). T

V IV

V IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
*684. 38	A	80	0. 09	18. 13	4-3	$a^3F - z^3D^{\circ}\dagger$	1939. 07	A	100	11. 95	18. 32	3-4	$a^3D - z^3F^{\circ}\dagger$
684. 44	A	50	0. 04	18. 08	3-2	(1)	1951. 48	A	80	11. 90	18. 23	2-3	(6)
*684. 38	A	80	0. 00	18. 04	2-1		1963. 13	A	70	11. 88	18. 16	1-2	
677. 35	A	50	0. 09	18. 32	4-4	$a^3F - z^3F^{\circ}\dagger$	1825. 85	A	50	11. 95	18. 71	3-2	$a^3D - z^3P^{\circ}\dagger$
678. 72	A	35	0. 04	18. 23	3-3	(2)	1817. 72	A	30	11. 90	18. 69	2-1	(7)
679. 65	A	25	0. 00	18. 16	2-2		1809. 88	A	15	11. 88	18. 70	1-0	
750. 10	A	30	1. 44	17. 90	2-2	$a^1D - z^1D^{\circ}$	Air						
						(3)	2268. 30	A	100	12. 46	17. 90	2-2	$b^1D - z^1D^{\circ}$
737. 84	A	100	2. 36	19. 09	4-3	$a^1G - z^1F^{\circ}$	Vac						
						(4)	1861. 56	A	60	12. 46	19. 09	2-3	$b^1D - z^1F^{\circ}$
1997. 74	A	80	11. 95	18. 13	3-3	$a^3D - z^3D^{\circ}$	1806. 22	A	40	12. 46	19. 29	2-1	$b^1D - z^1P^{\circ}$
1999. 32	A	60	11. 90	18. 08	2-2	(5)							(10)
Air													
2002. 47	A	50	11. 88	18. 04	1-1								
2014. 18	A	50	11. 95	18. 08	3-2								
2011. 15	A	25	11. 90	18. 04	2-1								
Vac													
1982. 49	A	30	11. 90	18. 13	2-3								
1990. 75	A	30	11. 88	18. 08	1-2								

UNITED STATES DEPARTMENT OF COMMERCE, Charles Sawyer, Secretary
NATIONAL BUREAU OF STANDARDS, A. V. Astin, Director

AN ULTRAVIOLET MULTIPLY TABLE

The Spectra of Chromium, Manganese, Iron, Cobalt,
Nickel, Copper, Zinc, Gallium, Germanium, Arsenic,
Selenium, Bromine, Krypton, Rubidium, Strontium,
Yttrium, Zirconium, and Niobium

By CHARLOTTE E. MOORE



Circular of the National Bureau of Standards 488, Section 2

Issued August 15, 1952

Foreword

The present Section of "An Ultraviolet Multiplet Table" is the second of a series being prepared in conjunction with the program on "Atomic Energy Levels," now in progress at the National Bureau of Standards. This Section contains the leading multiplets of 46 spectra of the elements Chromium through Niobium ($Z=24$ to 41). As before, no attempt has been made to include all spectra in this range that have been analyzed, or all classified lines of the spectra that are included.

As each Volume of "Atomic Energy Levels" is completed, a corresponding Section of this Table is being published for the same elements. Volume II of "Atomic Energy Levels," covering the elements Cr to Nb, is now in press.

The arrangement of the present Table is identical with that of Section 1. When the Ultraviolet Multiplets have been tabulated for elements throughout the periodic table, a Finding List will be published containing all of the lines arranged in order of wavelength. For each line the spectrum and Multiplet Number will be indicated.

This program, initiated while Dr. E. U. Condon was Director of the Bureau, is under the direction of Dr. W. F. Meggers, Chief of the Spectroscopy Section of the Division of Atomic and Radiation Physics. Their interest and counsel, as well as the cordial collaboration of many spectroscopists in other laboratories, are gratefully acknowledged by Dr. Moore and the Bureau.

A. V. ASTIN, *Director*.

WASHINGTON, D. C., June 30, 1952.

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		Co III.....	67	Strontium	38	Sr I.....	100
Nickel	28	Ni I.....	70			Sr II.....	101
		Ni II.....	73	Yttrium	39	Y I.....	102
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1. Arrangement

The present work is a continuation of the ultraviolet extension of the writer's "Revised Multiplet Table,"¹ which has the short-wave limit of about 3000 Å. The general plan and the arrangement of this Section are identical with those of Section 1,² and need not be described in detail here. A few comments are, however, in order. In addition to the letters W, L, I, and T that follow the references for each spectrum, to denote the sources used for wavelength, intensity, and analysis,

respectively, the letters I, P are here introduced to indicate references from which ionization potentials are taken.

As before, the excitation and ionization potentials have been derived by using the multiplication factor 0.00012345 to convert energy levels and limits in cm^{-1} to electron volts. Birge's revised conversion factor³ has been adopted for the calculation of the ionization potentials in "Atomic Energy Levels,"⁴ which explains the discordance in the two publications.

2. Symbols

The symbols have, in general, the same meaning as in Section 1. They are as follows:

* preceding the wavelength denotes that the line is a blend. If no symbol follows the wavelength, the line is blended with another in the same spectrum. If the intensity is that of a blend, this is also indicated by an asterisk in the intensity column.

§ follows a wavelength (an asterisk always preceding) to denote that a line in the first spectrum of a given element is blended with one in the second spectrum of that element. It has also been used in Fe III to denote a blend of Fe II and Fe III.

§§, ** special symbols following the wavelength (an asterisk always preceding) used for blends not covered

by the above symbols. They are explained in notes entered below the references for a given spectrum.

‡ follows the wavelength of the *raie ultime* for first and second spectra as given in the papers by Meggers⁵ on the strongest lines of spectra of neutral and singly ionized atoms.

† follows the multiplet designation to call attention to the fact that not all the observed lines belonging to the multiplet are listed here.

m precedes the wavelength when the line is masked. The predicted position of the line is given, as indicated by the letter P in the reference column, and the masking spectrum is indicated in the intensity column.

£ used for Co I in column three to indicate that the line may be due to Co II.

3. Acknowledgments

One of the most rewarding aspects of this work comes from the generous and cordial collaboration at home and abroad that the writer has experienced ever since the programs were initiated in 1946. At this Bureau W. F. Meggers and C. C. Kiess have furnished a wealth of valuable data (W. F. M., Co II, Ni II; C. C. K., Cr I, Br II, Zr III). They have also taken a genuine interest in the work and constantly given helpful and expert advice on many questions. E. U. Condon also generously supported this project during his tenure as Director.

A. G. Shenstone at Princeton University has arranged his spectroscopic research to meet some of the most urgent needs for spectrum analysis. He has also stimulated extensive work among those who have worked in his laboratory; L. C. Green (Fe I, Fe II), C. W. Curtis (Mn II), F. L. Moore, Jr. (Cr III, Cr IV), N. E. Hager, Jr. (Co II), and L. E. Gibson (Zn II) have all forwarded unpublished material.

One of the most enthusiastic contributors is M. A. Catalán of the University of Madrid. During his recent

visits to the United States, made possible by the support of the American Philosophical Society, Princeton University, Massachusetts Institute of Technology, and the National Bureau of Standards, he has been able to continue his spectroscopic investigations (Mn I, Mn III). His colleague O. García-Riquelme has also collaborated in this work (Mn I, Mn III).

B. Edlén of the University of Lund has supplied important data on Fe II. Other material has come from K. Burns (Co I), G. R. Harrison (Fe I), C. W. Gartlein (Ge I, Ge II), K. W. Meissner (Ge II), and K. L. Andrew (Ge II).

Mrs. Isabel D. Murray has compiled a large part of the material with outstanding competence. J. L. Mathusa and his staff in the Publications Section of the Bureau have handled the publication details with similar care. The writer takes great pleasure in recording here her sincere thanks to all who have so generously contributed to this extensive project.

¹ C. E. Moore, Contr. Princeton Univ. Observatory No. 20 (1945).

² C. E. Moore, Circ. Nat. Bur. Std. 488, Section 1 (1950).

³ R. T. Birge, Rev. Mod. Phys. 13, No. 4, 237 (1941); Reports on Progress in Physics 8, 131 (1941).

⁴ C. E. Moore, Circ. Nat. Bur. Std. 467, Vol. I (1949), Vol. II (1952).

⁵ W. F. Meggers, J. Opt. Soc. Amer. 31, 44 (1941); 31, 606 (1941).

CHROMIUM, Z=24

Cr I

I P 6.74 Anal A List B August 1951

REFERENCE

A C. C. Kless, unpublished material (1951). I P, W L, I, T

Cr I

Cr I

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air							Air						
2364. 73	A	150r	0. 00	5. 22	3-4	$a^1S-x^1P^o$	2986. 466	A	50r	1. 03	5. 16	4-4	$a^1D-y^1D^o$
2365. 91	A	125r	0. 00	5. 22	3-3	(1)	2986. 01	A	25r	1. 00	5. 13	3-3	(11)
2366. 81	A	100r	0. 00	5. 21	3-2		2985. 849	A	20	0. 98	5. 11	2-2	
							2986. 13	A	15	0. 96	5. 10	1-1	
2094. 93	A	10	0. 00	5. 89	3-4	$a^1S-w^1P^o$	3005. 06	A	40r	1. 03	5. 13	4-3	
2095. 39	A	10	0. 00	5. 89	3-3	(2)	3000. 88	A	50r	1. 00	5. 11	3-2	
2095. 88	A	10	0. 00	5. 89	3-2		2996. 571	A	40r	0. 98	5. 10	2-1	
							2991. 877	A	30r	0. 96	5. 09	1-0	
							2967. 64	A	15	1. 00	5. 16	3-4	
							2971. 102	A	25r	0. 98	5. 13	2-3	
							2975. 478	A	30r	0. 96	5. 11	1-2	
							2980. 784	A	25r	0. 96	5. 10	0-1	
2984. 82	A	3	0. 94	5. 07	2-3	$a^1S-y^1F^o$	2889. 294	A	25	1. 03	5. 30	4-4	$a^1D-z^1D^o$
2995. 094	A	30r	0. 94	5. 06	2-2	(3)	2893. 254	A	30	1. 00	5. 26	3-3	(12)
2988. 638	A	40r	0. 94	5. 07	2-3	$a^1S-x^1P^o$	2896. 756	A	25	0. 98	5. 24	2-2	
2994. 06	A	25	0. 94	5. 06	2-2	(4)	2899. 203	A	22	0. 96	5. 22	1-1	
2998. 783	A	40	0. 94	5. 05	2-1		2911. 148	A	22	1. 03	5. 26	4-3	
							2910. 892	A	25	1. 00	5. 24	3-2	
2941. 874	A	10	0. 94	5. 13	2-3	$a^1S-y^1D^o$	2909. 049	A	30b	0. 98	5. 22	2-1	
2956. 328	A	15	0. 94	5. 11	2-2	(5)	2905. 477	A	25	0. 96	5. 21	1-0	
2966. 85	A	7Fe?	0. 94	5. 10	2-1		2871. 628	A	22	1. 00	5. 30	3-4	
							2879. 27	A	22	0. 98	5. 26	2-3	
							2886. 995	A	25	0. 96	5. 24	1-2	
2813. 552	A	4	0. 94	5. 32	2-2	$a^1S-z^1S^o$	2894. 168	A	20	0. 96	5. 22	0-1	
						(6)							
2726. 496	A	75r	0. 94	5. 46	2-3	$a^1S-w^1P^o$	2916. 16	A	12	1. 03	5. 26	4-5	$a^1D-z^1G^o$
2731. 895	A	65r	0. 94	5. 45	2-2	(7)	2900. 25	A	12	1. 00	5. 25	3-4	(13)
2736. 463	A	50r	0. 94	5. 45	2-1		2888. 38	A	7	0. 98	5. 25	2-3	
							2880. 62	A	2	0. 96	5. 25	1-2	
							2918. 24	A	4	1. 03	5. 25	4-4	
2664. 44	A	7	0. 94	5. 57	2-3?	$a^1S-v^1P^o$	2902. 44	A	4	1. 00	5. 25	3-3	
2681. 46	A	18	0. 94	5. 54	2-2	(8)	2890. 35	A	1	0. 98	5. 25	2-2	
2696. 534	A	20	0. 94	5. 51	2-1								
							2853. 89	A	8	1. 00	5. 32	3-2	$a^1D-z^1S^o$
							2840. 292	A	7	0. 98	5. 32	2-2	(14)
							2830. 90	A	2	0. 96	5. 32	1-2	
2544. 702	A	12	0. 94	5. 79	2-3	$a^1S-u^1P^o$	2780. 695	A	60r	1. 03	5. 46	4-3	$a^1D-w^1P^o$
2538. 95	A	12	0. 94	5. 80	2-2	(9)	2769. 902	A	50r	1. 00	5. 45	3-2	(15)
2535. 47	A	10	0. 94	5. 80	2-1		2761. 735	A	40r	0. 98	5. 45	2-1	
							2764. 355	A	35r	1. 00	5. 46	3-3	
2367. 86	A	10	0. 94	6. 15	2-3	$a^1S-t^1P^o$	2757. 086	A	40r	0. 98	5. 45	2-2	
2379. 95	A	10	0. 94	6. 12	2-2	(10)	2752. 851	A	50r	0. 96	5. 45	1-1	
2380. 46	A	7	0. 94	6. 12	2-1		2751. 58	A	18	0. 98	5. 46	2-3	
							*2748. 275	A	50r	0. 96	5. 45	1-2	
										0. 96	5. 45	0-1	

Cr I—Continued

Cr I—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air							Air						
2755.24	A	8	1.03	5.50	4-5	$a^5D-y^5G^\circ$	2591.84	A	50r	1.03	5.79	4-3	$a^5D-u^5P^\circ$
2742.98	A	3	0.98	5.48	2-3	(16)	2571.74	A	30r	1.00	5.80	3-2	(24)
							*2557.144	A	25	0.98	5.80	2-1	
2716.177	A	20	1.03	5.57	4-3	$a^5D-v^5P^\circ$	2577.66	A	20r	1.00	5.79	3-3	
*2718.07 §	A	7	1.00	5.54	3-2	(17)	2560.695	A	30	0.98	5.80	2-2	
2700.590	A	20	1.00	5.57	3-3		2549.548	A	40	0.96	5.80	1-1	
*2705.724	A	10	0.98	5.54	2-2		2566.55	A	12	0.98	5.79	2-3	
2697.200	A	8	0.96	5.54	1-2		2553.064	A	15	0.96	5.80	1-2	
							2545.645	A	12	0.96	5.80	0-1	
2701.990	A	30	1.03	5.59	4-5	$a^5D-x^5F^\circ$	2568.52	A	8	1.03	5.83	4-5	$a^5D-x^5G^\circ$
2688.035	A	22	1.00	5.59	3-4	(18)	*2557.144	A	25	1.00	5.83	3-4	(25)
2678.15	A	12	0.98	5.59	2-3		2550.364	A	8	0.98	5.82	2-3	
2671.980	A	10	0.96	5.58	1-2		2547.868	A	8	0.96	5.81	1-2	
2669.359	A	12	0.96	5.58	0-1		2571.10	A	4	1.03	5.83	4-4	
2703.48	A	12	1.03	5.59	4-4		2561.33	A	5	1.00	5.82	3-3	
2690.251	A	20	1.00	5.59	3-3								
2680.33	A	9	0.98	5.58	2-2		*2580.04	A	7	1.03	5.81	4-5	$a^5D-y^5G^\circ$
2673.644	A	12	0.96	5.58	1-1		*2566.00	A	10	1.00	5.81	3-4	(26)
*2705.72	A	10	1.03	5.59	4-3		2555.42	A	6b	0.98	5.81	2-3	
2692.441	A	10	1.00	5.58	3-2		*2580.04	A	7	1.03	5.81	4-4	
2682.01	A	10	0.98	5.58	2-1		2566.41	A	1	1.00	5.81	3-3	
							2580.48	A	2	1.03	5.81	4-3	
2656.02	A	4	1.00	5.65	3-2	$a^5D-y^5P^\circ$	2552.79	A	10	0.98	5.81	2-1	$a^5D-z^5S^\circ$
*2645.30	A	2	0.98	5.64	2-1	(19)	2545.21	A	10	0.96	5.81	1-1	(27)
2636.89	A	4	0.96	5.64	1-0								
2644.23	A	7	0.98	5.65	2-2		2531.76	A	5	1.03	5.90	4-5	$a^5D-x^5H^\circ$
2637.168	A	4	0.96	5.64	1-1		2518.52	A	4	0.98	5.88	2-3	(28)
2636.094	A	5	0.96	5.65	1-2		2538.53	A	2	1.03	5.89	4-4	
2632.987	A	4	0.96	5.64	0-1		2529.20	A	5	1.00	5.88	3-3	
							2542.872	A	3	1.03	5.88	4-3	
2640.056	A	7	1.03	5.70	4-3	$a^5D-y^5D^\circ$							
2629.815	A	12	1.00	5.69	3-2	(20)	2541.359	A	20r	1.03	5.88	4-5	$a^5D-v^5F^\circ$
2620.480	A	12	0.98	5.69	2-1		2528.02	A	15	1.00	5.88	3-4	(29)
2625.318	A	15	1.00	5.70	3-3		2517.57	A	10	0.98	5.88	2-3	
2618.273	A	15	0.98	5.69	2-2		2510.49	A	8	0.96	5.88	1-2	
2612.490	A	7	0.96	5.69	1-1		m2506.84	P	Cr I	0.96	5.88	0-1	
*2613.82	A	8	0.98	5.70	2-3		2541.68	A	8	1.03	5.88	4-4	
2610.29	A	8	0.96	5.69	1-2		2528.25	A	10	1.00	5.88	3-3	
2608.385	A	10	0.96	5.69	0-1		2517.87	A	6	0.98	5.88	2-2	
							2510.63	A	6	0.96	5.88	1-1	
2622.867	A	18	1.03	5.73	4-4	$a^5D-w^5D^\circ$	2541.91	A	3	1.03	5.88	4-3	
2612.009	A	7	1.00	5.72	3-3	(21)	2528.56	A	8	1.00	5.88	3-2	
2601.88	A	4	0.98	5.72	2-2		2517.99	A	2	0.98	5.88	2-1	
2626.601	A	15	1.03	5.72	4-3								
2613.305	A	10	1.00	5.72	3-2		2527.11	A	20r	1.03	5.91	4-4	$a^5D-v^5D^\circ$
2605.36	A	7	0.98	5.72	2-1		2516.92	A	20r	1.00	5.90	3-3	(30)
2612.202	A	8	0.96	5.69	1-0		2508.11	A	18	0.98	5.90	2-2	
2600.61	A	8	0.98	5.72	2-3		2501.65	A	10	0.96	5.90	1-1	
2594.02	A	8	0.96	5.72	1-2		2530.44	A	15	1.03	5.90	4-3	
2593.41	A	8	0.96	5.72	0-1		2518.71	A	12	1.00	5.80	3-2	
							2508.97	A	15	0.98	5.90	2-1	
2603.56	A	10	1.03	5.77	4-5	$a^5D-w^5F^\circ$	2500.66	A	12	0.96	5.90	1-0	
2588.19	A	12	1.00	5.77	3-4	(22)	2513.62	A	15	1.00	5.91	3-4	
2579.14	A	12	0.98	5.76	2-3		2506.33	A	4	0.98	5.90	2-3	
2572.15	A	12	0.96	5.76	1-2		2500.79	A	4	0.96	5.90	1-2	
2568.098	A	12	0.96	5.76	0-1		2497.91	A	10	0.96	5.90	0-1	
2602.50	A	6	1.03	5.77	4-4								
2590.37	A	2	1.00	5.76	3-3		2519.51	A	50r	1.03	5.92	4-5	$a^5D-u^5F^\circ$
2579.90	A	4	0.98	5.76	2-2		2504.31	A	40r	1.00	5.93	3-4	(31)
2572.07	A	5	0.96	5.76	1-1		2496.30	A	35r	0.98	5.92	2-3	
2604.71	A	3	1.03	5.76	4-3		2492.57	A	30	0.96	5.92	1-2	
							2491.35	A	20	0.96	5.91	0-1	
2584.67	A	10	1.03	5.80	4-5	$a^5D-z^5G^\circ$	2506.82	A	25	1.00	5.92	3-3	
2575.89	A	8	1.00	5.79	3-4	(23)	2499.84	A	15	0.98	5.92	2-2	
2568.66	A	5	0.98	5.78	2-3		2495.08	A	20	0.96	5.91	1-1	
2590.07	A	5	1.03	5.79	4-4		2520.23	A	6	1.03	5.92	4-3	
2579.77	A	4	1.00	5.78	3-3		2510.37	A	2	1.00	5.92	3-2	

Cr I—Continued

Cr I—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air							Air						
2515.90	A	7	1.03	5.93	4-4	$a^5D-t^5F^o$ (32)	2284.66	A	12	1.03	6.43	4-4	$a^5D-t^5D^o$ (41)
2489.48	A	8	1.00	5.96	3-3		2275.30	A	10	1.00	6.42	3-3	
2481.23	A	10	0.98	5.95	2-2		2267.64	A	8	0.98	6.42	2-2	
2474.55	A	8	0.96	5.95	1-1		2262.15	A	2	0.96	6.42	1-1	
2502.72	A	2	1.03	5.96	4-3		2286.37	A	10	1.03	6.42	4-3	
2502.55	A	25r	1.00	5.93	3-4		2276.30	A	9	1.00	6.42	3-2	
2479.14	A	15	0.98	5.96	2-3		2268.12	A	9	0.98	6.42	2-1	
2474.08	A	15	0.96	5.95	1-2		2262.32	A	6	0.96	6.42	1-0	
2470.88	A	12	0.96	5.95	0-1	$a^5D-x^5P^o$ (33)	2273.62	A	9	1.00	6.43	3-4	$a^5D-r^5F^o$ (42)
2474.27	A	4	0.98	5.97	2-1		2266.66	A	10	0.98	6.42	2-3	
2473.53	A	1b	0.96	5.95	1-0		2261.67	A	8	0.96	6.42	1-2	
2466.49	A	7	0.98	5.98	2-2		2259.08	A	6	0.96	6.42	0-1	
2467.14	A	8	0.96	5.97	1-1		2220.42	A	10	1.00	6.56	3-4	$a^5D-s^5D^o$ (43)
2463.49	A	5	0.96	5.97	0-1	$a^5D-w^5G^o$ (34)	2210.39	A	4	0.96	6.55	1-2	
2419.98	A	8	1.03	6.13	4-5		2198.32	A	10	1.03	6.64	4-4	
2410.18	A	2	1.00	6.12	3-4		2194.89	A	5	1.00	6.62	3-3	
2406.03	A	5	0.98	6.11	2-1		2190.83	A	2	0.98	6.61	2-2	
2399.29	A	3	0.96	6.11	1-1	$a^5D-y^5S^o$ (35)	2205.20	A	4b	1.03	6.62	4-3	$a^5D-q^5F^o$ (44)
2395.84	A	2	0.96	6.11	0-1		2198.91	A	3	1.00	6.61	3-2	
2408.60	A	50r	1.03	6.15	4-3		2188.09	A	2	1.00	6.64	3-4	
2408.72	A	35r	1.00	6.12	3-2		2162.47	A	30b	1.03	6.73	4-5	
2399.56	A	20	0.98	6.12	2-1		2157.74	A	30b	1.00	6.72	3-4	$a^5D-u^5G^o$ (45)
2396.36	A	30r	1.00	6.15	3-3	$a^5D-t^5P^o$ (36)	2154.43	A	20b	0.98	6.71	2-3	
2399.02	A	20r	0.98	6.12	2-2		2152.57	A	15b	0.96	6.70	1-2	
2392.86	A	25r	0.96	6.12	1-1		2152.28	A	7b	0.96	6.69	0-1	
2386.77	A	7b	0.98	6.15	2-3		2167.68	A	4b	1.03	6.72	4-4	
2392.34	A	10b	0.96	6.12	1-2		2162.23	A	8b	1.00	6.71	3-3	
2389.43	A	10b	0.96	6.12	0-1		2158.00	A	15b	0.98	6.70	2-2	
2419.82	A	2	1.03	6.13	4-4		2155.09	A	5b	0.96	6.69	1-1	
2405.70	A	2	1.00	6.13	3-3		2160.50	A	3bh	0.98	6.69	2-1	
2395.89	A	2	0.98	6.13	2-2	$a^5D-x^5F^o$ (37)	2049.32	A	10	1.03	7.05	4-5	
2407.41	A	8	1.00	6.13	3-4		2042.72	A	12	1.00	7.04	3-4	
2396.04	A	7	0.98	6.13	2-3		2028.68	A	5	0.96	7.05	1-2	$a^5D-u^5P^o$ (46)
2389.21	A	3b	0.96	6.13	1-2		2024.36	A	1	0.96	7.05	0-17	
2395.77	A	8	1.00	6.15	3-2	$a^5D-y^5S^o$ (38)	2039.37	A	30	1.03	7.08	4-5	
2386.18	A	10	0.98	6.15	2-2		2034.24	A	30	1.00	7.07	3-4	$a^5D-p^5F^o$ (47)
2379.56	A	8	0.96	6.15	1-2		2029.42	A	20	0.98	7.06	2-3	
2383.303	A	30r	1.03	6.20	4-5		2028.13	A	15	0.96	7.05	1-2	
2373.69	A	50rh	1.00	6.20	3-4		2025.87	A	20	0.96	7.05	0-1	
2370.37	A	35r	0.98	6.19	2-3	$a^5D-s^5F^o$ (39)	2043.06	A	15	1.03	7.07	4-4	
2366.31	A	50	0.96	6.18	1-2		2036.35	A	12	1.00	7.06	3-3	
2365.13	A	5	0.96	6.17	0-1		2032.95	A	7	0.98	7.05	2-2	
2385.72	A	7bh	1.03	6.20	4-4		2028.35	A	15	0.96	7.05	1-1	
2379.85	A	10bv	1.00	6.19	3-3		1999.97	A	20	1.03	7.20	4-4	$a^5D-r^5D^o$ (48)
2372.88	A	20r	0.98	6.18	2-2		Vac						
2368.49	A	12	0.96	6.17	1-1		1997.90	A	25	1.00	7.18	3-3	
2391.95	A	3b	1.03	6.19	4-3		1994.56	A	20	0.98	7.17	2-2	
2382.36	A	7b	1.00	6.18	3-2		1992.66	A	10	0.96	7.16	1-1	
2375.06	A	5	0.98	6.17	2-1		Air						
2366.14	A	25	1.03	6.24	4-4	$a^5D-u^5D^o$ (40)	2005.77	A	12	1.03	7.18	4-3	
2350.40	A	12	1.00	6.25	3-3		2000.61	A	30	1.00	7.17	3-2	
2339.71	A	4	0.98	6.25	2-2		Vac						
2362.19	A	15	1.03	6.25	4-3		*1997.30	A	18	0.98	7.16	2-1	
2348.92	A	25	1.00	6.25	3-2		1994.11	A	12	0.96	7.15	1-0	
2339.27	A	15	0.98	6.25	2-1		1992.13	A	10	1.00	7.20	3-4	
2332.98	A	7	0.96	6.25	1-0		1991.22	A	20	0.98	7.18	2-3	
2354.30	A	15	1.00	6.24	3-4		1989.93	A	20	0.96	7.17	1-2	
2341.17	A	20	0.98	6.25	2-3		1990.27	A	10	0.96	7.16	0-1	
2333.33	A	8	0.96	6.25	1-2								
2329.63	A	10	0.96	6.25	0-1								

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I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air 2004.95 Vac	A	10	1.03	7.18	4-4	$a^3D-s^3F^o$ (49)	Air 2795.818 2790.28 *2801.553	A	12	2.99	7.40	6-7	$a^3H-w^3I^o$ (61)
1905.71	A	8	1.00	7.19	3-3			A	12	2.97	7.39	5-6	
Air 2003.55 Vac	A	5	1.03	7.19	4-3		2771.449	A	3	2.99	7.39	6-6	
*1997.30	A	18	1.00	7.18	3-2			A	10	2.95	7.41	4-5	$a^3H-r^3H^o$ (62)
1997.10	A	7	1.00	7.18	3-4		2742.165	A	20	2.99	7.49	6-7	$a^3H-v^3I^o$ (63)
1989.00	A	5	0.98	7.19	2-3?		2741.078	A	22	2.97	7.47	5-6	
							2739.395	A	20	2.95	7.46	4-5	
							2748.58	A	3	2.97	7.46	5-5	
Air 2938.83	A	7b	2.53	6.73	6-5	$a^3G-q^3F^o$ (50)	2702.519	A	15	2.99	7.55	6-6	$a^3H-s^3H^o$ (64)
2948.87	A	6b	2.53	6.72	5-4		2705.414	A	12	2.97	7.53	5-5	
2957.28	A	2bh	2.53	6.71	4-3		2706.531	A	20	2.95	7.51	4-4	
2963.74	A	4bh	2.53	6.70	3-2		2715.51	A	2	2.97	7.51	5-4	
2968.20	A	2b	2.53	6.69	2-1		2704.744	A	12	2.99	7.55	6-5	$a^3H-r^3G^o$ (65)
2715.98	A	4b	2.53	7.08	6-5	$a^3G-p^3F^o$ (51)	2697.01	A	15	2.97	7.55	5-4	
*2722.98	A	2b	2.53	7.07	5-4		2691.404	A	12	2.95	7.54	4-3	
2732.95	A	2	2.53	7.05	3-2		2694.24	A	2	2.97	7.55	5-5	
2733.00	A	1h	2.53	7.05	2-1		2685.40	A	4h	2.95	7.55	4-5	
*2722.98	A	2b	2.53	7.07	4-4		2642.118	A	20	2.99	7.66	6-5	$a^3H-q^3G^o$ (66)
2428.89	A	4b	2.53	7.61	2-2	a^3G-3^o (52)	2632.06	A	5	2.97	7.66	5-5?	
							2627.847	A	4	2.95	7.65	4-4	
2555.50	A	10	2.70	7.53	3-4	$a^3P-p^3F^o$ (53)	2583.02	A	9b	2.99	7.77	6-6	$a^3H-r^3H^o$ (67)
2565.21	A	3	2.70	7.51	2-3		*2578.275	A	10b	2.97	7.76	5-5	
							2574.68	A	10	2.95	7.75	4-4	
							2587.88	A	2	2.99	7.76	6-5	
							2570.17	A	1	2.95	7.76	4-5	
2853.94	A	8	2.97	7.30	2-3	$a^3P-u^3D^o$ (54)	2564.47	A	7	2.99	7.80	6-6	$a^3H-q^3H^o$ (68)
2828.167	A	12	2.90	7.27	1-2		2557.56	A	4	2.97	7.80	5-5	
2811.169	A	12	2.86	7.25	0-1		2551.36	A	2	2.95	7.79	4-4	
2875.44	A	5	2.97	7.27	2-2		2511.96	A	15	2.99	7.90	6-6	$a^3H-p^3H^o$ (69)
2839.013	A	8	2.90	7.25	1-1		2507.32	A	12	2.97	7.89	5-5	
2886.65	A	2	2.97	7.25	2-1		2505.00	A	10	2.95	7.88	4-4	
2870.175	A	10	2.97	7.27	2-3	$a^3P-t^3D^o$ (55)	2516.42	A	1	2.99	7.89	6-5	
2835.242	A	7	2.90	7.26	1-2		2502.89	A	3	2.97	7.90	5-6	
2799.743	A	3	2.86	7.27	0-1		2499.66	A	2	2.95	7.89	4-5	
2882.76	A	3	2.97	7.26	2-2		2381.36	A	7	2.99	8.17	6-5	$a^3H-p^3G^o$ (70)
2777.664	A	10b	2.97	7.42	2-1	$a^3P-x^3S^o$ (56)	2378.08	A	5	2.97	8.16	5-4	
2733.51	A	8	2.90	7.42	1-1		2375.98	A	7	2.95	8.15	4-3	
2707.69	A	7b	2.86	7.42	0-1		2371.18	A	2	2.95	8.16	4-4	
2737.222	A	8	2.97	7.48	2-3	$a^3P-s^3D^o$ (57)							
2693.315	A	8	2.90	7.48	1-2		2722.085	A	10	3.00	7.53	4-5?	$b^3D-s^3H^o$ (71)
2689.82	A	2	2.90	7.49	1-1								
2660.006	A	12	2.97	7.61	2-2	a^3P-3^o (58)	*2938.03	A	8	3.07	7.27	3-2	$a^3G-u^3D^o$ (72)
2619.504	A	8	2.90	7.61	1-2		*2938.03	A	8	3.07	7.27	4-3	$a^3G-t^3D^o$ (73)
							2901.98	A	4	3.09	7.34	5-4	$a^3G-r^3F^o$ (74)
2984.014	A	7	2.99	7.12	6-5	$a^3H-t^3G^o$ (59)	2896.064	A	6	3.07	7.34	4-3	
2981.42	A	4	2.97	7.11	5-4		2895.675	A	7	3.07	7.33	3-2	
2973.26	A	1	2.95	7.11	4-3		2890.16	A	12	3.07	7.34	4-4	
2891.42	A	15	2.99	7.26	6-6	$a^3H-t^3H^o$ (60)	2890.738	A	10	3.07	7.34	3-3	
2881.14	A	12	2.97	7.25	5-5		2884.83	A	4	3.07	7.34	3-4	
2873.181	A	12	2.95	7.25	4-4								
2883.30	A	2	2.97	7.25	5-4								
2871.023	A	3	2.95	7.25	4-5								

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I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High		
Air						
2829.725	A	5	3.09	7.45	5-4	$a^3G-q^3F^o$
2821.76	A	6	3.07	7.45	4-3	(75)
2822.51	A	2	3.07	7.44	3-2	
2818.47	A	12	3.07	7.45	4-4	
2816.684	A	12	3.07	7.45	3-3	
2813.41	A	1	3.07	7.45	3-4	
2816.95	A	7	3.09	7.47	5-6	$a^3G-v^3I^o$
2813.685	A	4	3.07	7.46	4-5	(76)
2824.87	A	1	3.09	7.46	5-5?	
2821.69	A	3	3.09	7.46	5-5	$a^3G-s^3G^o$
*2801.553	A	3	3.07	7.47	3-3	(77)
2810.503	A	5	3.07	7.46	4-5	
2802.65	A	8	8.07	7.47	3-4	
2765.21	A	5	3.09	7.55	5-6	$a^3G-s^3H^o$
*2768.46	A	2	3.07	7.53	4-5	(78)
2774.13	A	2	3.07	7.51	3-4	
2779.33	A	1	3.09	7.53	5-5	
2767.53	A	7	3.09	7.55	5-5	$a^3G-r^3G^o$
2759.67	A	8	3.07	7.55	4-4	(79)
*2758.236	A	10	3.07	7.54	3-3	
2770.44	A	3	3.09	7.55	5-4	
*2763.09	A	15	3.07	7.54	4-3	
2756.77	A	10	3.07	7.55	4-5	
2754.821	A	15	3.07	7.55	3-4	
m2701.98	P	Cr I	3.09	7.66	5-5	$a^3G-q^3G^o$
2696.135	A	10	3.07	7.65	4-4	(80)
2694.887	A	10	3.07	7.65	3-3	
2691.712	A	4	3.07	7.66	4-5	
2640.221	A	5	3.09	7.77	5-6	$a^3G-r^3H^o$
2635.44	A	7	3.07	7.76	4-5	(81)
2635.777	A	8Fe?	3.07	7.75	3-4	
*2645.30	A	2	3.09	7.76	5-5	
2620.841	A	7	3.09	7.80	5-6	$a^3G-q^3H^o$
*2613.82	A	8	3.07	7.80	4-5	(82)
2611.342	A	3	3.07	7.79	3-4	
*2566.00	A	10	3.09	7.90	5-6	$a^3G-p^3H^o$
2561.38	A	4	3.07	7.89	4-5	(83)
2429.89	A	6b	3.09	8.17	5-5	$a^3G-p^3G^o$
2426.66	A	7	3.07	8.16	4-4	(84)
2427.92	A	8	3.07	8.15	3-3	
2434.98	A	1	3.09	8.16	5-4	
2431.67	A	3	3.07	8.15	4-3	
2945.104	A	3	3.11	7.30	4-3	$a^3F-u^3D^o$
2961.77	A	4b	3.10	7.27	3-2?	(85)
2959.07	A	7	3.08	7.25	2-1	
2962.40	A	6	3.11	7.27	4-3	$a^3F-t^3D^o$
2969.53	A	1	3.10	7.26	3-2	(86)
2956.13	A	1	3.10	7.27	3-3?	
*2913.716	A	20d	3.11	7.34	4-4	$a^3F-r^3F^o$
2904.674	A	12	3.10	7.34	3-3	(87)
2919.74	A	1	3.11	7.34	4-3	
2918.72	A	1	3.10	7.33	3-2	
2907.704	A	4	3.10	7.34	3-4	
2899.68	A	10	3.08	7.34	2-3	
2840.891	A	15	3.11	7.45	4-4	$a^3F-q^3F^o$
2838.491	A	10	3.10	7.45	3-3	(88)
2831.039	A	12	3.08	7.44	2-2	
2844.38	A	1	3.10	7.44	3-2	
2835.16	A	2	3.10	7.45	3-4	
2825.196	A	8	3.08	7.45	2-3	

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I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High		
Air						
2832.794	A	8	3.11	7.46	4-5	$a^3F-s^3G^o$
2824.224	A	10	3.10	7.47	3-4	(89)
2809.932	A	10	3.08	7.47	2-3	
2829.90	A	5	3.11	7.47	4-4	
2823.08	A	1d?	3.10	7.47	3-3	
2820.97	A	2	3.11	7.48	4-3	$a^3F-s^3D^o$
2815.317	A	2	3.10	7.48	3-3	(90)
2801.13	A	15	3.08	7.48	2-2	
2793.78	A	3	3.11	7.53	4-4	$a^3F-p^3F^o$
2790.092	A	8	3.11	7.53	4-5	$a^3F-s^3H^o$
2795.263	A	5	3.10	7.51	3-4	(92)
2778.213	A	12	3.11	7.55	4-5	$a^3F-r^3G^o$
2775.668	A	12	3.10	7.55	3-4	(93)
2766.39	A	10	3.08	7.54	2-3	
2781.15	A	10	3.11	7.55	4-4	
2779.134	A	12	3.10	7.54	3-3	
2784.63	A	4	3.11	7.54	4-3	
2711.40	A	6b1	3.10	7.65	3-4	$a^3F-q^3G^o$
2702.68	A	2	3.08	7.65	2-3	(94)
2716.643	A	10	3.11	7.65	4-4	
2714.834	A	8	3.10	7.65	3-3	
2655.05	A	4	3.11	7.76	4-5	$a^3F-r^3H^o$
2654.844	A	5	3.10	7.75	3-4	(95)
*2438.10	A	3b	3.11	8.17	4-5	$a^3F-p^3G^o$
2439.02	A	7	3.10	8.16	3-4	(96)
2434.22	A	4	3.08	8.15	2-3	
2443.25	A	2	3.11	8.16	4-4	
2998.118	A	8	3.43	7.55	5-5	$b^3G-r^3G^o$
2991.403	A	6	3.42	7.55	4-4	(97)
3001.55	A	1	3.43	7.55	5-4	
2995.42	A	2	3.42	7.54	4-3	
2921.35	A	8	3.43	7.66	5-5	$b^3G-q^3G^o$
2849.30	A	8	3.43	7.77	5-6	$b^3G-r^3H^o$
2846.024	A	12	3.42	7.76	4-5	(99)
2842.918	A	10	3.41	7.75	3-4	
2855.22	A	4	3.43	7.76	5-5	
2851.56	A	3	3.42	7.75	4-4	
2826.734	A	20	3.43	7.80	5-6	$b^3G-q^3H^o$
2820.81	A	15	3.42	7.80	4-5	(100)
2814.52	A	10b	3.41	7.79	3-4	
*2763.09	A	15	3.43	7.90	5-6	$b^3G-p^3H^o$
2759.84	A	12	3.42	7.89	4-5	(101)
*2758.236	A	10	3.41	7.88	3-4	
*2768.46	A	2	3.43	7.89	5-5	
2605.82	A	6	3.43	8.17	5-5?	$b^3G-p^3G^o$
2604.08	A	2b	3.42	8.16	4-4	(102)
2602.62	A	1	3.41	8.15	3-3	
2611.75	A	1	3.43	8.16	5-4	
2609.84	A	1	3.42	8.15	4-3	

Cr II

I P 16.43 Anal A List B March 1951

REFERENCE

A C. C. Kiess, J. Research Nat. Bur. Std., **47**, 385, RP2266 (1951). W L, I, T, I P

* and §§ = Blend with Fe II

Cr II

Cr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2055. 59	A	200	0. 00	6. 00	2½-3½	a °S - z °P°	2677. 19	A	125	1. 54	6. 15	4½-4½	a °D - z °D°
2061. 54	A	175	0. 00	5. 99	2½-2½	(1)	2677. 13	A	100	1. 52	6. 13	3½-3½	(8)
2065. 46	A	150	0. 00	5. 97	2½-1½		2661. 73	A	50	1. 50	6. 14	2½-2½	
							2663. 67	A	45	1. 48	6. 11	0½-0½	
2025. 58	A	5	0. 00	6. 09	2½-2½	a °S - z °P°	*2691. 03	A	90	1. 54	6. 13	4½-3½	
2039. 90	A	10	0. 00	6. 05	2½-1½	(2)	2672. 83	A	90	1. 52	6. 14	3½-2½	
							2671. 80	A	80	1. 50	6. 12	2½-1½	
2013. 65	A	40	0. 00	6. 13	2½-3½	a °S - z °D°	2668. 71	A	70	1. 49	6. 11	1½-0½	
*2011. 13	A	20	0. 00	6. 14	2½-2½	(3)	2663. 42	A	75	1. 52	6. 15	3½-4½	
2016. 90	A	7	0. 00	6. 12	2½-1½		2666. 02	A	80	1. 50	6. 13	2½-3½	
							2653. 57	A	85	1. 49	6. 14	1½-2½	
Vac							2658. 59	A	100	1. 48	6. 12	0½-1½	
1825. 34	A	3	0. 00	6. 76	2½-3½	a °S - z °D°							
1830. 61	A	5	0. 00	6. 74	2½-2½	(4)	2534. 33	A	40	1. 54	6. 41	4½-4½	a °D - z °F°
							2531. 84	A	25	1. 52	6. 39	3½-3½	(9)
							2529. 48	A	25	1. 50	6. 38	2½-2½	
							2527. 57	A	7	1. 49	6. 37	1½-1½	
Air							2544. 26	A	15	1. 54	6. 39	4½-3½	
2835. 63†	A	200	1. 54	5. 89	4½-5½	a °D - z °F°	2539. 52	A	15	1. 52	6. 38	3½-2½	
2843. 24	A	100	1. 52	5. 86	3½-4½	(5)	2534. 96	A	3	1. 50	6. 37	2½-1½	
2849. 83	A	100	1. 50	5. 83	2½-3½		2522. 01	A	4	1. 52	6. 41	3½-4½	
2855. 67	A	100	1. 49	5. 81	1½-2½								
2860. 92	A	85	1. 48	5. 79	0½-1½		2364. 02	A	10	1. 54	6. 76	4½-3½	a °D - z °D°
2858. 91	A	75	1. 54	5. 86	4½-4½		2353. 29	A	3	1. 52	6. 76	3½-3½	(10)
2862. 57	A	125	1. 52	5. 83	3½-3½		2353. 44	A	3	1. 50	6. 74	2½-2½	
2865. 10	A	150	1. 50	5. 81	2½-2½		2354. 05	A	3	1. 49	6. 73	1½-1½	
2866. 72	A	100	1. 49	5. 79	1½-1½		2354. 64	A	3	1. 48	6. 72	0½-0½	
2867. 65	A	100	1. 48	5. 78	0½-0½								
2878. 45	A	50	1. 54	5. 83	4½-3½		2875. 97	A	100	2. 47	6. 76	3½-3½	a °D - z °D°
2877. 97	A	60	1. 52	5. 81	3½-2½		2870. 43	A	100	2. 44	6. 74	2½-2½	(11)
2876. 24	A	60	1. 50	5. 79	2½-1½		2867. 09	A	65	2. 42	6. 73	1½-1½	
*2873. 46	A	65	1. 49	5. 78	1½-0½		2865. 34	A	30	2. 41	6. 72	0½-0½	
							2889. 19	A	35	2. 47	6. 74	3½-2½	
2766. 55	A	150	1. 54	6. 00	4½-3½	a °D - z °P°	2880. 86	A	75	2. 44	6. 73	2½-1½	
2762. 58	A	140	1. 52	5. 99	3½-2½	(6)	2873. 81	A	50	2. 42	6. 72	1½-0½	
2757. 72	A	80	1. 50	5. 97	2½-1½		2857. 40	A	40	2. 44	6. 76	2½-3½	
2751. 85	A	85	1. 52	6. 00	3½-3½		2856. 77	A	40	2. 42	6. 74	1½-2½	
2750. 72	A	100	1. 50	5. 99	2½-2½		2858. 64	A	30	2. 41	6. 73	0½-1½	
2748. 98	A	100	1. 49	5. 97	1½-1½								
2740. 09	A	35	1. 50	6. 00	2½-3½		*2226. 47	A	7	2. 47	8. 01	3½-3½	a °D - y °D°
2742. 02	A	70	1. 49	5. 99	1½-2½		2238. 87	A	1	2. 44	7. 96	2½-2½	(12)
2743. 63	A	70	1. 48	5. 97	0½-1½		m2250. 00	P	Cr II	2. 42	7. 91	1½-1½	
							m2257. 96	P	Cr II	2. 41	7. 88	0½-0½	
2698. 40	A	100	1. 52	6. 09	3½-2½	a °D - z °P°	2215. 30	A	5	2. 44	8. 01	2½-3½	
2712. 30	A	80	1. 50	6. 05	2½-1½	(7)	2230. 57	A	2	2. 42	7. 96	1½-2½	
2722. 74	A	70	1. 49	6. 02	1½-0½								
2687. 09	A	65	1. 50	6. 09	2½-2½		2203. 89	A	8	2. 47	8. 07	3½-4½	a °D - z °G°
2703. 85	A	30	1. 49	6. 05	1½-1½		2199. 09	A	1	2. 44	8. 06	2½-3½	(13)
*2717. 51	A	40	1. 48	6. 02	0½-0½								
2678. 79	A	100	1. 49	6. 09	1½-2½								
2698. 68	A	35	1. 48	6. 05	0½-1½								

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2140.50	A	20	2.47	8.24	3½-2½	a 4D-y 4P°	2129.89	A	50	2.53	8.33	5½-4½	a 4G-y 4F°
2147.19	A	30	2.44	8.19	2½-1½	(14)	2132.71	A	35	2.53	8.32	4½-3½	(24)
2144.05	A	15	2.42	8.18	1½-0½		2132.93	A	40	2.53	8.32	3½-2½	
*2130.22	A	50	2.44	8.24	2½-2½		2133.03	A	30	2.53	8.32	2½-1½	
2139.54	A	10	2.42	8.19	1½-1½		*2130.22	A	50	2.53	8.33	4½-4½	
2139.33	A	7	2.41	8.18	0½-0½		*2132.62	A	40	2.53	8.32	3½-3½	
m2134.86	P	Cr II	2.41	8.19	0½-1½		2132.38	A	8	2.53	8.32	2½-3½	
2112.16	A	10	2.47	8.31	3½-4½	a 4D-y 4G°	2127.53	A	8	2.53	8.33	4½-5½	a 4G-z 4I°
2102.97	A	25	2.44	8.31	2½-3½	(15)	2127.26	A	7	2.53	8.33	5½-5½	(25)
2113.04	A	8	2.47	8.31	3½-3½		2110.68	A	4	2.53	8.38	4½-3½	a 4G-x 4D°
2102.55	A	5	2.44	8.31	2½-2½		2111.26	A	4	2.53	8.38	3½-2½	(26)
2107.92	A	15	2.47	8.33	3½-4½	a 4D-y 4P°	2110.92	A	5	2.53	8.38	2½-1½	
2100.34	A	15	2.44	8.32	2½-3½	(16)	2110.98	A	10	2.53	8.38	2½-2½	
2093.29	A	8	2.42	8.32	1½-2½		2045.30	A	12	2.53	8.57	5½-6½	a 4G-y 4H°†
*2089.12	A	12	2.41	8.32	0½-1½		2054.75	A	10	2.53	8.54	4½-5½	(27)
2110.37	A	5	2.47	8.32	3½-3½		2062.25	A	10	2.53	8.52	3½-4½	
2100.61	A	10	2.44	8.32	2½-2½		2069.38	A	8	2.53	8.50	2½-3½	
2093.62	A	2	2.42	8.32	1½-1½		*2040.68	A	20d	2.53	8.58	5½-4½	a 4G-x 4F°
2100.96	A	2	2.44	8.32	2½-1½		2041.80	A	7	2.53	8.58	4½-3½	(28)
*2020.69	A	10	2.47	8.58	3½-4½	a 4D-x 4P°	2046.98	A	8	2.53	8.58	3½-2½	
*2011.13	A	20	2.44	8.58	2½-3½	(17)	2041.02	A	8	2.53	8.58	4½-4½	
2005.50	A	4	2.42	8.58	1½-2½		2041.57	A	6	2.53	8.58	2½-2½	
*2006.61	A	10	2.41	8.56	0½-1½		2040.42	A	4	2.53	8.58	2½-3½	
2020.31	A	1	2.47	8.58	3½-3½		*2022.10	A	12	2.53	8.64	3½-2½	a 4G-y 4D°
2012.21	A	25	2.44	8.58	2½-2½		2034.88	A	15	2.53	8.60	2½-1½	(29)
2017.48	A	2	2.44	8.56	2½-1½		2021.89	A	5	2.53	8.64	2½-2½	
Vac							2024.20	A	2	2.53	8.63	3½-3½	a 4G-y 4G°
1836.23	A	12	2.47	9.20	3½-2½	a 4D-x 4P°†	2015.87	A	15	2.53	8.65	3½-4½	(30)
1820.84	A	4	2.44	9.22	2½-1½	(18)	Vac						
1808.66	A	2	2.42	9.25	1½-0½		1985.52	A	22	2.53	8.75	5½-5½	a 4G-x 4G°
Air							1993.63	A	25	2.53	8.73	4½-4½	(31)
2297.17	A	50	2.53	7.90	5½-6½	a 4G-z 4H°	Air						
2307.19	A	35	2.53	7.88	4½-5½	(19)	2202.99	A	30	2.53	8.69	3½-3½	
2314.71	A	40	2.53	7.86	3½-4½		2007.18	A	20	2.53	8.68	2½-2½	
2320.08	A	30	2.53	7.85	2½-3½		Vac						
2306.81	A	10	2.53	7.88	5½-5½		1993.37	A	15	2.53	8.73	5½-4½	
2314.81	A	8	2.53	7.86	4½-4½		Air						
2320.39	A	10	2.53	7.85	3½-3½		2007.39	A	10	2.53	8.68	3½-2½	
2211.85	A	20	2.53	8.11	5½-5½	a 4G-z 4G°	Vac						
2228.26	A	12	2.53	8.07	4½-4½	(20)	1985.67	A	12	2.53	8.75	4½-5½	
2234.50	A	7	2.53	8.06	3½-3½		2002.71	A	10	2.53	8.69	2½-3½	
2239.24	A	8	2.53	8.04	2½-2½		2003.88	A	35	2.53	8.69	5½-5½	a 4G-y 4H°
2227.88	A	10	2.53	8.07	5½-4½		*2004.34	A	35	2.53	8.69	4½-4½	(32)
2234.58	A	12	2.53	8.06	4½-3½		2004.03	A	5	2.53	8.69	5½-4½	
2239.51	A	4	2.53	8.04	3½-2½		*2004.34	A	35	2.53	8.69	3½-4½	
2212.21	A	15	2.53	8.11	4½-5½		Vac						
2228.18	A	8	2.53	8.07	3½-4½		1852.13	A	25	2.53	9.20	5½-4½	a 4G-w 4F°
2234.22	A	5	2.53	8.06	2½-3½		*1855.14	A	20	2.53	9.19	4½-3½	(33)
2213.56	A	10	2.53	8.11	3½-4½	a 4G-z 4G°†	1858.72	A	15	2.53	9.17	3½-2½	
2220.01	A	2	2.53	8.09	2½-3½	(21)	1860.12	A	12	2.53	9.17	2½-1½	
2150.10	A	15	2.53	8.27	3½-2½	a 4G-z 4D°	1852.37	A	3	2.53	9.20	4½-4½	
2166.75	A	10	2.53	8.23	2½-1½	(22)	*1855.14	A	20	2.53	9.19	3½-3½	
2133.49	A	100	2.53	8.32	5½-5½	a 4G-y 4G°	1858.44	A	20	2.53	9.17	2½-2½	
2134.52	A	100	2.53	8.31	4½-4½	(23)	Air						
2135.34	A	50	2.53	8.31	3½-3½		2319.38	A	50	2.69	8.01	2½-3½	a 4P-y 4D°
2134.62	A	75	2.53	8.31	2½-2½		2345.35	A	25	2.69	7.96	1½-2½	(34)
2134.20	A	40	2.53	8.31	5½-4½		*2366.84	A	35w	2.69	7.91	0½-1½	
2135.42	A	50	2.53	8.31	4½-3½		2345.25	A	15	2.69	7.96	2½-2½	
2134.88	A	25	2.53	8.31	3½-2½		*2366.84	A	35w	2.69	7.91	1½-1½	
2133.81	A	18	2.53	8.32	4½-5½		*2381.48	A	50	2.69	7.88	0½-0½	
2135.09	A	15	2.53	8.31	2½-3½		2366.75	A	5	2.69	7.91	2½-1½	
							*2381.48	A	50	2.69	7.88	1½-0½	

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)		I A	Ref	Int	E P		J	Multiplet (No)
			Low	High							Low	High		
Air								Air						
2226.27	A	15	2.69	8.24	2½-2½	a 'P-y 'P°	2333.46	A	25	3.09	8.38	3¼-3¼	b 'D-z 'D°	
*2244.90	A	20	2.69	8.19	1½-1½	(35)	2334.58	A	10	3.09	8.38	2½-2½	(47)	
*2249.91	A	8	2.69	8.18	0½-0½		2334.24	A	7	3.09	8.38	1½-1½		
2226.35	A	15	2.69	8.24	1½-2½		2334.41	A	2	3.09	8.38	0½-0½		
*2244.90	A	20	2.69	8.19	0½-1½		2333.87	A	7	3.09	8.38	3¼-2½		
2244.83	A	10	2.69	8.19	2½-1½		2334.45	A	5	3.09	8.38	2½-1½		
*2249.91	A	8	2.69	8.18	1½-0½		2334.83	A	10	3.09	8.38	1½-0½		
2170.71	A	50	2.69	8.38	2½-3½	a 'P-z 'D°	2334.17	A	8	3.09	8.38	2½-3½		
2171.18	A	30	2.69	8.38	1½-2½	(36)	2334.37	A	8	3.09	8.38	1½-2½		
*2171.06	A	40	2.69	8.38	0½-1½		2333.84	A	12	3.09	8.38	0½-1½		
*2171.55	A	20	2.69	8.38	1½-1½		2286.27	A	8	3.09	8.49	3¼-3¼	b 'D-z 'F°	
2170.97	A	10	2.69	8.38	0½-0½		2296.22	A	2	3.09	8.47	2½-2½	(48)	
*2171.55	A	20	2.69	8.38	2½-1½		2248.30	A	50	3.09	8.58	3¼-4¼	b 'D-z 'F°	
2150.65	A	20	2.69	8.43	1½-1½	a 'P-z 'S°	2248.56	A	40	3.09	8.58	2½-3¼	(49)	
*2150.74	A	30	2.69	8.43	0½-1½	(37)	2249.78	A	30	3.09	8.58	1½-2½		
2076.96	A	30	2.69	8.64	2½-2½	a 'P-y 'D°	*2256.01	A	50	3.09	8.56	0½-1½		
2090.70	A	20	2.69	8.60	1½-1½	(38)	2247.91	A	18	3.09	8.58	3½-3½		
Vac							2249.98	A	20	3.09	8.58	2½-2½		
1935.58	A	25	2.69	9.07	2½-3½	a 'P-w 'D°	2256.38	A	12	3.09	8.56	1½-1½		
1937.56	A	20	2.69	9.07	1½-2½	(39)	2249.32	A	2	3.09	8.58	3½-2½		
1938.42	A	3	2.69	9.06	0½-1½		2256.56	A	2	3.09	8.56	2½-1½		
1898.92	A	35	2.69	9.20	2½-2½	a 'P-z 'P°	2241.69	A	15	3.09	8.60	1½-1½	b 'D-y 'D°	
1890.55	A	30	2.69	9.22	1½-1½	(40)	2225.93	A	1	3.09	8.64	1½-2½	(50)	
1883.35	A	10	2.69	9.25	0½-0½		2241.30	A	15	3.09	8.60	0½-1½		
Air							2217.89	A	7	3.09	8.65	3½-4½	b 'D-y 'G°	
2506.11	A	8	3.09	8.01	3½-3½	b 'D-y 'D°	2063.21	A	10	3.09	9.07	3½-3½	b 'D-w 'D°†	
2537.19	A	2	3.09	7.96	2½-2½	(41)	2065.89	A	10	3.09	9.07	2½-2½	(52)	
2536.35	A	5	3.09	7.96	3½-2½		2066.75	A	3	3.09	9.06	1½-1½		
*2562.37	A	25wl	3.09	7.91	2½-1½		2066.66	A	2	3.09	9.06	0½-0½		
2506.93	A	4	3.09	8.01	2½-3½		2021.56	A	20	3.09	9.20	3½-2½	b 'D-z 'P°	
2536.93	A	3	3.09	7.96	1½-2½		2012.58	A	20	3.09	9.22	2½-1½	(53)	
*2561.59	A	7w	3.09	7.91	0½-1½		2004.24	A	10	3.09	9.25	1½-0½		
2500.07	A	5	3.09	8.03	1½-0½	b 'D-z 'S°	*2022.10	A	12	3.09	9.20	2½-2½		
2499.63	A	5	3.09	8.03	0½-0½	(42)	2012.43	A	10	3.09	9.22	1½-1½		
2397.75	A	40	3.09	8.24	3½-2½	b 'D-y 'P°	2012.12	A	4	3.09	9.22	0½-1½		
2420.11	A	25	3.09	8.19	2½-1½	(43)	2006.91	A	10	3.09	9.24	1½-0½	b 'D-y 'P°	
2425.66	A	15	3.09	8.18	1½-0½		2001.65	A	4	3.09	9.26	1½-1½	(54)	
2398.51	A	15	3.09	8.24	2½-2½		*2006.61	A	10	3.09	9.24	0½-0½		
2419.87	A	15	3.09	8.19	1½-1½		2001.36	A	3	3.09	9.26	0½-1½		
2425.21	A	18	3.09	8.18	0½-0½		2935.12	A	60	3.81	8.01	2½-3½	b 'P-y 'D°	
2398.28	A	1	3.09	8.24	1½-2½		2928.12	A	40	3.74	7.96	1½-2½	(55)	
*2402.98	A	4w	3.09	8.23	2½-1½	b 'D-z 'D°	2930.83	A	35	3.70	7.91	0½-1½		
2382.20	A	5	3.09	8.27	2½-2½	(44)	2976.70	A	35	3.81	7.96	2½-2½		
2402.73	A	3	3.09	8.23	1½-1½		2961.70	A	50*	3.74	7.91	1½-1½		
2381.97	A	2	3.09	8.27	1½-2½		2953.34	A	35	3.70	7.88	0½-0½		
2402.31	A	2	3.09	8.23	0½-1½		3011.42	A	7	3.81	7.91	2½-1½		
2378.90	A	3	3.09	8.28	2½-1½	b 'D-z 'P°	2984.69	A	10	3.74	7.88	1½-0½		
2378.68	A	5	3.09	8.28	1½-1½	(45)	2879.17	A	10	3.74	8.03	1½-0½	b 'P-z 'S°	
2378.28	A	3	3.09	8.28	0½-1½		2906.76	A	2	3.81	8.06	2½-3½	b 'P-z 'G°	
2356.96	A	5	3.09	8.33	3½-4½	b 'D-y 'F°†	*2868.63	A	4wl	3.74	8.04	1½-2½	(57)	
2360.75	A	8	3.09	8.32	2½-3½	(46)	2787.61	A	55	3.81	8.24	2½-2½	b 'P-y 'P°	
*2360.89	A	6l	3.09	8.32	1½-2½		2773.30	A	30	3.74	8.19	1½-1½	(58)	
			3.09	8.32	0½-1½		*2753.66	A	20	3.70	8.18	0½-0½		
							*2816.83	A	30	3.81	8.19	2½-1½		
							2780.89	A	25	3.74	8.18	1½-0½		
							2744.97	A	40	3.74	8.24	1½-2½		
							*2746.21	A	50	3.70	8.19	0½-1½		

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2765.62	A	12	3.81	8.27	2½-2½	b 'P-z 'D°	2231.02	A	12	3.72	9.25	6½-7½	a 'I-z 'K°
2793.63	A	10	3.81	8.23	2½-1½	(59)	2241.47	A	3	3.72	9.23	5½-6½	(78)
2723.64	A	60	3.74	8.27	1½-2½		2241.80	A	30	3.72	9.23	6½-6½	
2761.16	A	5	3.81	8.28	2½-1½	b 'P-z 'P°	*2130.22	A	50	3.72	9.52	6½-5½	a 'I-w 'H°
2734.07	A	3	3.74	8.26	1½-0½	(60)	2121.26	A	30	3.72	9.54	5½-4½	(79)
2719.31	A	3	3.74	8.28	1½-1½								
2736.73	A	5	3.81	8.32	2½-3½	b 'P-y 'F°	2971.90	A	75	3.75	7.90	6½-6½	a 'II-z 'H°
*2696.10	A	4	3.74	8.32	1½-2½	(61)	2979.73	A	80	3.74	7.88	5½-5½	(80)
2671.02	A	2	3.70	8.32	0½-1½		2985.32	A	75	3.73	7.86	4½-4½	
2737.19	A	3	3.81	8.32	2½-2½		2989.18	A	70	3.72	7.85	3½-3½	
2701.10	A	30	3.81	8.38	2½-3½	b 'P-z 'D°	2988.04	A	12	3.75	7.88	6½-5½	
2661.59	A	10	3.74	8.38	1½-2½	(62)	2992.42	A	10	3.74	7.86	5½-4½	
2636.46	A	10	3.70	8.38	0½-1½		2994.74	A	20	3.73	7.85	4½-3½	
2701.65	A	15	3.81	8.38	2½-2½		2972.67	A	7w	3.73	7.88	4½-5½	
2661.41	A	7	3.74	8.38	1½-1½		2830.60	A	60	3.75	8.11	6½-5½	a 'H-z 'G°
2637.20	A	10	3.70	8.38	0½-0½		2849.33	A	18	3.74	8.07	5½-4½	(81)
2662.15	A	4	3.74	8.38	1½-0½		2853.18	A	30	3.73	8.06	4½-3½	
2670.06	A	30	3.81	8.43	2½-1½	b 'P-z 'S°	2856.32	A	20	3.72	8.04	3½-2½	
2630.93	A	50	3.74	8.43	1½-1½	(63)	2848.15	A	4w	3.72	8.06	3½-3½	
*2606.53	A	25	3.70	8.43	0½-1½		*2816.83	A	30	3.73	8.11	4½-5½	
2638.05	A	5	3.81	8.49	2½-3½	b 'P-z 'F°	2837.88	A	20	3.72	8.07	3½-4½	
2650.38	A	2	3.81	8.47	2½-2½	(64)	2822.38	A	100	3.75	8.12	6½-7½	a 'H-z 'I°
							2830.46	A	100	3.74	8.10	5½-6½	(82)
							2840.01	A	85	3.73	8.08	4½-5½	
							2851.35	A	60	3.72	8.05	3½-4½	
							2837.96	A	4	3.75	8.10	6½-6½	
2950.69	A	7	3.72	7.90	6½-6½	a 'I-z 'H°	*2846.44	A	30	3.74	8.08	5½-5½	
*2950.10	A	10	3.72	7.90	5½-6½	(65)	2856.42	A	4	3.73	8.05	4½-4½	
*2811.45	A	10	3.72	8.11	6½-5½	a 'I-z 'G°	2825.00	A	20	3.74	8.11	5½-4½	a 'H-z 'G°
*2810.89	A	6	3.72	8.11	5½-5½	(66)	2830.08	A	8	3.73	8.09	4½-3½	(83)
2803.22	A	8	3.72	8.12	6½-7½	a 'I-z 'I°	2814.22	A	5	3.72	8.11	3½-4½	
2818.08	A	3	3.72	8.10	5½-6½	(67)	2703.56	A	75	3.75	8.32	6½-5½	a 'H-y 'G°
2818.66	A	5	3.72	8.10	6½-6½		*2697.90	A	30	3.74	8.31	5½-4½	(84)
2686.00	A	8	3.72	8.32	6½-5½	a 'I-y 'G°	2693.53	A	45	3.73	8.31	4½-3½	
2686.66	A	4	3.72	8.31	5½-4½	(68)	2688.28	A	55	3.72	8.31	3½-2½	
2670.24	A	25	3.72	8.34	6½-6½	a 'I-z 'I°	2696.76	A	20	3.74	8.32	5½-5½	
2675.67	A	20	3.72	8.33	5½-5½	(69)	2692.11	A	25	3.73	8.31	4½-4½	
2590.72	A	75	3.72	8.49	6½-5½	a 'I-z 'H°	2689.03	A	20	3.72	8.31	3½-3½	
2607.90	A	50	3.72	8.45	5½-4½	(70)	2687.60	A	3	3.72	8.31	3½-4½	
2547.76	A	10	3.72	8.57	6½-6½	a 'I-y 'H°	*2691.03	A	90	3.74	8.33	5½-4½	a 'H-y 'F°
*2561.59	A	7w	3.72	8.54	5½-5½	(71)	2689.20	A	35	3.73	8.32	4½-3½	(85)
2573.32	A	4	3.72	8.52	5½-4½		*2685.19	A	18	3.72	8.32	3½-2½	
2540.22	A	3	3.72	8.58	5½-4½	a 'I-z 'F°	2684.72	A	7	3.72	8.32	3½-3½	
						(72)	2680.85	A	5	3.74	8.34	5½-6½	a 'H-z 'I°
2501.48	A	25	3.72	8.65	5½-4½	a 'I-y 'G°	2681.07	A	3	3.73	8.33	4½-5½	(86)
						(73)	2607.06	A	12	3.75	8.49	6½-5½	a 'H-z 'H°
2454.47	A	30	3.72	8.75	6½-5½	a 'I-z 'G°	2618.49	A	7	3.74	8.45	5½-4½	(87)
2466.22	A	10	3.72	8.73	5½-4½	(74)	2600.73	A	5w	3.74	8.49	5½-5½	
2454.06	A	15	3.72	8.75	5½-5½		2595.34	A	4w1	3.73	8.49	4½-5½	
2483.79	A	40	3.72	8.69	6½-5½	a 'I-y 'H°	2608.80	A	8	3.72	8.45	3½-4½	
2483.67	A	25	3.72	8.69	5½-4½	(75)	2601.58	A	6	3.72	8.47	3½-2½	a 'H-z 'F°
2257.96	A	50	3.72	9.19	6½-6½	a 'I-y 'I°	2563.58	A	50	3.75	8.57	6½-6½	a 'H-y 'H°
2257.76	A	45	3.72	9.19	5½-5½	(76)	2571.78	A	50	3.74	8.54	5½-5½	(89)
2258.09	A	40	3.72	9.19	6½-5½		*2578.315	A	40	3.73	8.52	4½-4½	
2257.62	A	35	3.72	9.19	5½-6½		2584.10	A	50	3.72	8.50	3½-3½	
2243.62	A	50	3.72	9.22	6½-5½	a 'I-z 'H°	2577.97	A	5	3.75	8.54	6½-5½	
*2256.01	A	50	3.72	9.19	5½-4½	(77)	2583.61	A	12	3.74	8.52	5½-4½	
2243.28	A	40	3.72	9.22	5½-5½		2588.25	A	12	3.73	8.50	4½-3½	
							2557.45	A	10	3.74	8.57	5½-6½	
							2566.52	A	8	3.73	8.54	4½-5½	
							2574.18	A	7	3.72	8.52	3½-4½	

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
*2550.28	A	15	3.74	8.58	5½-4½	a 4H-x 4F°	2727.25	A	85	3.85	8.38	4½-3½	a 4F-x 4D°
2544.58	A	2	3.73	8.58	4½-3½	(90)	2724.04	A	65	3.85	8.38	3½-2½	(102)
2542.38	A	3	3.72	8.58	3½-2½		2720.06	A	50	3.84	8.38	2½-1½	
							2718.32	A	40	3.84	8.38	1½-0½	
2511.22	A	20	3.74	8.65	5½-4½	a 4H-y 4G°	2723.48	A	30	3.85	8.38	3½-3½	
2519.08	A	25	3.73	8.63	4½-3½	(91)	2720.25	A	40	3.84	8.38	2½-2½	
							*2717.51	A	40	3.84	8.38	1½-1½	
2469.13	A	20	3.75	8.75	6½-5½	a 4H-x 4G°	2719.68	A	3	3.84	8.38	2½-3½	
2475.69	A	30	3.74	8.73	5½-4½	(92)							
2486.29	A	30	3.73	8.69	4½-3½		*2659.47	A	10wd?	3.85	8.49	3½-3½	a 4F-x 4F°
2489.28	A	50	3.72	8.68	3½-2½		2655.78	A	10	3.84	8.49	2½-3½	(103)
*2463.46	A	8	3.74	8.75	5½-5½								
2470.81	A	8	3.73	8.73	4½-4½		*2643.02	A	5	3.85	8.52	3½-4½	a 4F-y 4H°
2482.48	A	10	3.72	8.69	3½-3½		2649.89	A	1	3.84	8.50	2½-3½	(104)
							2646.60	A	2	3.85	8.52	4½-4½	
2498.80	A	40	3.75	8.69	6½-5½	a 4H-y 4H°							
2493.28	A	25	3.74	8.69	5½-4½	(93)	2611.62	A	20	3.85	8.58	4½-4½	a 4F-x 4F°
2488.34	A	12w	3.73	8.69	4½-4½		2607.64	A	10	3.85	8.58	3½-3½	(105)
							2606.07	A	12	3.84	8.58	2½-2½	
2966.03	A	40	3.85	8.01	4½-3½	a 4F-y 4D°	2612.56	A	15	3.84	8.56	1½-1½	
3003.92	A	35	3.85	7.96	3½-2½	(94)	*2611.04	A	30	3.85	8.58	4½-3½	
3034.54	A	25	3.84	7.91	2½-1½		2609.55	A	3	3.85	8.58	3½-2½	
3055.44	A	15	3.84	7.88	1½-0½		2614.90	A	10	3.84	8.56	2½-1½	
2999.30	A	8	3.84	7.96	2½-2½		2608.17	A	20	3.85	8.58	3½-4½	
							2604.16	A	20	3.84	8.58	2½-3½	
2898.53	A	50	3.85	8.11	4½-5½	a 4F-z 4G°	2603.73	A	10	3.84	8.58	1½-2½	
2921.81	A	40	3.85	8.07	3½-4½	(95)							
*2928.32	A	50	3.84	8.06	2½-3½		2592.86	A	3	3.84	8.60	1½-1½	a 4F-y 4D°
2933.95	A	35	3.84	8.04	1½-2½								
2926.15	A	18	3.85	8.07	4½-4½		2570.70	A	7	3.85	8.65	4½-4½	a 4F-y 4G°
2932.69	A	30	3.85	8.06	3½-3½		2580.88	A	1w	3.85	8.63	3½-3½	(107)
2936.92	A	25	3.84	8.04	2½-2½		2567.34	A	10	3.85	8.65	3½-4½	
2941.32	A	3	3.85	8.04	3½-2½		*2577.48	A	4	3.84	8.63	2½-3½	
2936.05	A	3	3.85	8.05	3½-4½	a 4F-z 4I°	2520.65	A	40	3.85	8.75	4½-5½	a 4F-x 4G°
2940.42	A	2	3.85	8.05	4½-4½	(96)	2530.18	A	150w1*	3.85	8.73	3½-4½	(108)
							2543.14	A	30	3.84	8.69	2½-3½	
2901.00	A	12	3.85	8.11	4½-4½	a 4F-z 4G°	2548.04	A	25	3.84	8.68	1½-2½	
2908.29	A	10	3.85	8.09	3½-3½	(97)	2533.45	A	10	3.85	8.73	4½-4½	
2912.53	A	1	3.85	8.09	4½-3½		2546.45	A	20	3.85	8.69	3½-3½	
2896.74	A	35	3.85	8.11	3½-4½		*2550.28	A	15	3.84	8.68	2½-2½	
2903.97	A	20	3.84	8.09	2½-3½		2549.72	A	1	3.85	8.69	4½-3½	
							2553.62	A	3	3.85	8.68	3½-2½	
*2811.45	A	10	3.85	8.24	3½-2½	a 4F-y 4P°							
						(98)	2551.58	A	50	3.85	8.69	4½-5½	a 4F-y 4H°
2789.08	A	8	3.85	8.27	3½-2½	a 4F-z 4D°	2548.58	A	40	3.85	8.69	3½-4½	(109)
2813.53	A	5	3.84	8.23	2½-1½	(99)	2551.88	A	7	3.85	8.69	4½-4½	
2785.10	A	10	3.84	8.27	2½-2½								
2810.78	A	5	3.84	8.23	1½-1½		2532.99	A	6	3.84	8.71	2½-2½	a 4F-y 4F°
2782.44	A	3	3.84	8.27	1½-2½		2515.89	A	4	3.84	8.75	2½-3½	(110)
							*2530.78	A	20	3.84	8.71	1½-2½	
2765.46	A	20	3.85	8.32	4½-5½	a 4F-y 4G°							
2762.78	A	10	3.85	8.31	3½-4½	(100)	*2365.26	A	20w	3.85	9.07	4½-3½	a 4F-w 4D°
2760.36	A	20	3.84	8.31	2½-3½		2365.15	A	4	3.85	9.07	3½-2½	(111)
2756.96	A	20	3.84	8.31	1½-2½		2363.65	A	3	3.84	9.06	2½-1½	
2764.28	A	15	3.85	8.31	3½-3½		2362.00	A	1	3.84	9.06	1½-0½	
2768.16	A	10	3.85	8.31	4½-3½		2362.26	A	2	3.84	9.07	2½-2½	
2759.40	A	50	3.85	8.33	4½-4½	a 4F-y 4F°							
2759.73	A	30	3.85	8.32	3½-3½	(101)	2977.65	A	2	3.87	8.01	2½-3½	a 4D-y 4D°
2756.30	A	40	3.84	8.32	2½-2½								
2754.28	A	30	3.84	8.32	1½-1½		2948.47	A	3	3.87	8.06	2½-3½	a 4D-z 4G°
2763.59	A	20	3.85	8.32	4½-3½		2973.10	A	12	3.89	8.04	1½-2½	(113)
2760.20	A	12	3.85	8.32	3½-2½		*2957.26	A	4	3.87	8.04	2½-2½	
2756.89	A	15	3.84	8.32	2½-1½								
2755.53	A	15	3.85	8.33	3½-4½		2923.80	A	8	3.87	8.09	2½-3½	a 4D-z 4G°
2755.81	A	10	3.84	8.32	2½-3½								
*2753.66	A	20	3.84	8.32	1½-2½								

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2825.95	A	7	3.87	8.24	2½-2½	a ²D-y ²P°	1939.15	A	6	3.87	10.24	2½-1½	a ²D-w ²P°
2840.43	A	12	3.89	8.24	1½-2½	(115)	1948.51	A	10	3.89	10.23	1½-0½	(136)
							1945.98	A	10	3.89	10.24	1½-1½	
2803.35	A	20	3.87	8.27	2½-2½	a ²D-z ²D°	Air						
2846.70	A	15	3.89	8.23	1½-1½	(116)	2999.96	A	25	3.99	8.11	3½-4½	a ²F-z ²G°
*2817.57	A	8	3.89	8.27	1½-2½		3034.99	A	20	4.02	8.09	2½-3½	(137)
							3012.33	A	3	3.99	8.09	3½-3½	
2798.77	A	30	3.87	8.28	2½-1½	a ²D-z ²P°	2746.15	A	15	3.99	8.49	3½-3½	a ²F-z ²F°
2828.79	A	15	3.89	8.26	1½-0½	(117)	2778.51	A	5	4.02	8.47	2½-2½	(138)
							2764.96	A	10	4.02	8.49	2½-3½	
2778.27	A	4	3.87	8.31	2½-3½	a ²D-y ²G°	2758.61	A	15	4.02	8.50	2½-3½	a ²F-y ²H°
2791.45	A	5	3.89	8.31	1½-2½	(118)							(139)
							2693.00	A	4	3.99	8.58	3½-2½	a ²F-x ²F°
2788.74	A	5	3.89	8.32	1½-1½	a ²D-y ²F°	2720.69	A	15	4.02	8.56	2½-1½	(140)
						(119)							
*2737.09	A	15	3.87	8.38	2½-3½	a ²D-x ²D°	2658.91	A	40	3.99	8.64	3½-2½	a ²F-y ²D°
2751.22	A	4	3.89	8.38	1½-2½	(120)	2699.34	A	20	4.02	8.60	2½-1½	(141)
2737.66	A	3	3.87	8.38	2½-2½		2676.53	A	5	4.02	8.64	2½-2½	
2751.04	A	4	3.89	8.38	1½-1½		2648.08	A	15	3.99	8.65	3½-4½	a ²F-y ²G°
2737.47	A	4	3.87	8.38	2½-1½		2680.16	A	8	4.02	8.63	2½-3½	(142)
2718.43	A	55	3.89	8.43	1½-1½	a ²D-z ²S°	2608.60	A	1	3.99	8.73	3½-4½	a ²F-x ²G°
						(121)	*2643.02	A	5	4.02	8.69	2½-3½	(143)
							2625.87	A	2	3.99	8.69	3½-3½	
2672.37	A	15	3.87	8.49	2½-3½	a ²D-z ²F°	2650.80	A	7	4.02	8.68	2½-2½	
2698.11	A	8	3.89	8.47	1½-2½	(122)							
2685.04	A	18	3.87	8.47	2½-2½		2596.87	A	8	3.99	8.75	3½-3½	a ²F-y ²F°
							2632.10	A	3	4.02	8.71	2½-2½	(144)
2620.10	A	1w	3.87	8.58	2½-3½	a ²D-x ²F°	2476.90	A	20	3.99	8.98	3½-4½	a ²F-x ²G°
2622.03	A	3	3.87	8.58	2½-2½	(123)	2496.44	A	10	4.02	8.97	2½-3½	(145)
2643.54	A	12	3.89	8.56	1½-1½		2481.09	A	4	3.99	8.97	3½-3½	
2589.70	A	30	3.87	8.64	2½-2½	a ²D-y ²D°	2393.99	A	50	3.99	9.15	3½-3½	a ²F-x ²F°
2623.39	A	30	3.89	8.60	1½-1½	(124)	2389.75	A	40	4.02	9.19	2½-2½	(146)
*2611.04	A	30	3.87	8.60	2½-1½		2375.69	A	4	3.99	9.19	3½-2½	
2601.85	A	10	3.89	8.64	1½-2½								
							2376.40	A	5	3.99	9.19	3½-3½	a ²F-w ²F°
2558.35	A	4	3.87	8.69	2½-3½	a ²D-x ²G°†	2396.48	A	10	4.02	9.17	2½-2½	(147)
*2577.48	A	4	3.89	8.68	1½-2½	(125)	2358.82	A	5	4.02	9.26	2½-1½	a ²F-y ²P°
													(148)
*2530.78	A	20	3.87	8.75	2½-3½	a ²D-y ²F°	2300.58	A	30	3.99	9.36	3½-4½	a ²F-w ²G°
2559.76	A	15	3.89	8.71	1½-2½	(126)	2318.77	A	10	4.02	9.35	2½-3½	(149)
							2305.52	A	2	3.99	9.35	3½-3½	
2372.63	A	2	3.87	9.07	2½-3½	a ²D-w ²D°	2245.33	A	7	3.99	9.49	3½-3½	a ²F-w ²F°
2387.03	A	4	3.89	9.06	1½-1½	(127)	2252.37	A	4	4.02	9.50	2½-2½	(150)
2337.74	A	20	3.87	9.15	2½-3½	a ²D-x ²F°	2193.30	A	20	3.99	9.62	3½-2½	a ²F-x ²D°
2330.03	A	10	3.89	9.19	1½-2½	(128)	2196.84	A	15	4.02	9.64	2½-1½	(151)
2320.29	A	5	3.87	9.19	2½-2½		2079.86	A	10	3.99	9.93	3½-2½	a ²F-w ²D°
							2096.42	A	6	4.02	9.91	2½-1½	(152)
2320.94	A	1	3.87	9.19	2½-3½	a ²D-w ²F°	2036.98	A	3	3.99	10.05	3½-3½	a ²F-v ²F°
2336.42	A	3	3.89	9.17	1½-2½	(129)	2047.32	A	2	4.02	10.03	2½-2½	(153)
2326.61	A	3	3.87	9.17	2½-2½								
2304.02	A	4	3.89	9.25	1½-0½	a ²D-x ²P°	Vac						
						(130)	1987.43	A	5	4.02	10.24	2½-1½	a ²F-w ²P°
2291.11	A	10	3.87	9.26	2½-1½	a ²D-y ²P°							(154)
*2307.56	A	10w1	3.89	9.24	1½-0½	(131)	1911.36	A	7	3.99	10.45	3½-3½	a ²F-u ²F°
							1923.02	A	8	4.02	10.44	2½-2½	(155)
2195.78	A	4	3.87	9.49	2½-3½	a ²D-w ²F°	1866.32	A	15	3.99	10.61	3½-4½	a ²F-v ²G°
2199.23	A	2	3.89	9.50	1½-2½	(132)	1887.96	A	6	4.02	10.56	2½-3½	(156)
2190.52	A	2	3.87	9.50	2½-2½		1879.05	A	10	3.99	10.56	3½-3½	
2156.22	A	20	3.87	9.59	2½-1½	a ²D-x ²P°							
2161.66	A	10	3.89	9.60	1½-0½	(133)							
2164.67	A	7	3.89	9.59	1½-1½								
2145.97	A	15	3.87	9.62	2½-2½	a ²D-x ²D°							
2146.23	A	10	3.89	9.64	1½-1½	(134)							
2137.96	A	15	3.87	9.64	2½-1½								
*2037.26	A	4	3.87	9.93	2½-2½	a ²D-w ²D°							
2050.32	A	10	3.89	9.91	1½-1½	(135)							
2042.78	A	5	3.87	9.91	2½-1½								
2044.76	A	1	3.89	9.93	1½-2½								

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
*2949. 79	A	10	4. 05	8. 24	3½-2½	b 'F-y 'P°	*2402. 98	A	4w	4. 06	9. 19	4½-4½	b 'F-x 'H°
*2951. 39	A	10	4. 06	8. 24	2½-2½	(157)							(171)
2925. 22	A	3	4. 05	8. 27	3½-2½	b 'F-z 'D°	2332. 39	A	3	4. 06	9. 35	2½-3½	b 'F-w 'G°
2958. 17	A	4	4. 06	8. 23	2½-1½	(158)							(172)
*2957. 26	A	1	4. 05	8. 23	1½-1½		*2224. 87	A	1	4. 05	9. 60	1½-0½	b 'F-x 'P°
2925. 90	A	3	4. 05	8. 27	1½-2½								(173)
*2896. 45	A	40	4. 06	8. 32	4½-5½	b 'F-y 'G°							
2896. 31	A	30	4. 05	8. 31	3½-4½	(159)	2985. 01	A	7	4. 14	8. 27	3½-2½	b 'G-z 'D°
2899. 48	A	35	4. 06	8. 31	2½-3½		3008. 30	A	6	4. 13	8. 23	2½-1½	(174)
2897. 73	A	20	4. 05	8. 31	1½-2½		2970. 65	A	2	4. 13	8. 28	2½-1½	b 'G-z 'P°
2897. 82	A	10	4. 06	8. 31	4½-4½								(175)
2889. 82	A	25	4. 06	8. 33	4½-4½	b 'F-y 'F°	2968. 68	A	15	4. 16	8. 32	5½-5½	b 'G-y 'G°
2892. 95	A	20	4. 05	8. 32	3½-3½	(160)	2963. 46	A	20	4. 15	8. 31	4½-4½	(176)
*2895. 02	A	18	4. 06	8. 32	2½-2½		2956. 60	A	10	4. 14	8. 31	3½-3½	
2894. 81	A	18	4. 05	8. 32	1½-1½		2965. 18	A	2	4. 15	8. 31	4½-3½	
2894. 40	A	10	4. 06	8. 32	4½-3½		2955. 68	A	2	4. 14	8. 31	3½-2½	
2893. 50	A	4wl	4. 05	8. 32	3½-2½		2961. 72	A	50	4. 16	8. 33	5½-4½	b 'G-y 'F°
2895. 66	A	5	4. 06	8. 32	2½-1½		2959. 95	A	18	4. 15	8. 32	4½-3½	(177)
2888. 33	A	2wl	4. 05	8. 33	3½-4½		2951. 94	A	10	4. 14	8. 32	3½-2½	
2854. 58	A	5	4. 06	8. 38	4½-3½	b 'F-x 'D°	2943. 64	A	4	4. 13	8. 32	2½-1½	
2853. 76	A	8	4. 05	8. 38	3½-2½	(161)	2955. 12	A	10	4. 15	8. 33	4½-4½	
*2855. 05	A	35	4. 06	8. 38	2½-1½		*2951. 39	A	10	4. 14	8. 32	3½-3½	
2854. 23	A	3	4. 05	8. 38	1½-1½		2942. 99	A	3	4. 13	8. 32	2½-2½	
2728. 17	A	15	4. 06	8. 58	4½-4½	b 'F-x 'F°	2949. 44	A	20	4. 16	8. 34	5½-6½	b 'G-z 'I°
2726. 26	A	15	4. 05	8. 58	3½-3½	(162)	*2950. 10	A	10	4. 15	8. 33	4½-5½	(178)
2729. 73	A	6	4. 06	8. 58	2½-2½		2918. 29	A	3	4. 15	8. 38	4½-3½	b 'G-x 'D°
2738. 67	A	2	4. 05	8. 56	1½-1½		*2910. 64	A	30	4. 14	8. 38	3½-2½	(179)
2727. 59	A	1	4. 06	8. 58	4½-3½		2852. 75	A	7	4. 16	8. 49	5½-5½	b 'G-z 'H°
2728. 93	A	2	4. 05	8. 58	1½-2½		*2867. 94	A	4w	4. 15	8. 45	4½-4½	(180)
2694. 70	A	7	4. 06	8. 64	2½-2½	b 'F-y 'D°	2844. 83	A	3	4. 15	8. 49	4½-3½	b 'G-z 'F°
2717. 05	A	7	4. 05	8. 60	1½-1½	(163)							(181)
2629. 04	A	5	4. 06	8. 75	4½-5½	b 'F-x 'G°	2800. 77	A	85	4. 16	8. 57	5½-6½	b 'G-y 'H°
*2641. 80	A	25	4. 05	8. 73	3½-4½	(164)	*2812. 00	A	85	4. 15	8. 54	4½-5½	(182)
2660. 77	A	8	4. 06	8. 69	2½-3½		2818. 36	A	75	4. 14	8. 52	3½-4½	
*2667. 89	A	25wl	4. 05	8. 68	1½-2½		2822. 01	A	65	4. 13	8. 50	2½-3½	
*2643. 02	A	5	4. 06	8. 73	4½-4½		2817. 96	A	12	4. 16	8. 54	5½-5½	
*2659. 47	A	10wd?	4. 05	8. 69	3½-3½		2826. 15	A	10	4. 15	8. 52	4½-4½	
2662. 72	A	7	4. 06	8. 69	4½-5½	b 'F-y 'H°	2830. 24	A	10	4. 14	8. 50	3½-3½	
2663. 02	A	10	4. 06	8. 69	4½-4½	(165)	2792. 16	A	80	4. 16	8. 58	5½-4½	b 'G-x 'F°
2649. 66	A	7	4. 06	8. 71	2½-2½	b 'F-y 'F°	2785. 69	A	65	4. 15	8. 58	4½-3½	(183)
2648. 95	A	2	4. 05	8. 71	1½-2½	(166)	*2780. 30	A	85	4. 14	8. 58	3½-2½	
2506. 76	A	5w	4. 05	8. 98	3½-4½	b 'F-x 'G°	2782. 36	A	40	4. 13	8. 56	2½-1½	
2512. 22	A	8	4. 06	8. 97	2½-3½	(167)	2786. 30	A	2	4. 15	8. 58	4½-4½	
2460. 42	A	30	4. 06	9. 07	4½-3½	b 'F-w 'D°	2772. 33	A	8	4. 13	8. 58	2½-2½	
2462. 35	A	15	4. 05	9. 07	3½-2½	(168)	2743. 94	A	6	4. 14	8. 64	3½-2½	b 'G-y 'D°
2464. 94	A	8	4. 06	9. 06	2½-1½		2760. 04	A	20	4. 13	8. 60	2½-1½	(184)
2464. 62	A	7	4. 05	9. 06	1½-0½		2736. 20	A	2	4. 13	8. 64	2½-2½	
2459. 35	A	8	4. 05	9. 07	3½-3½		2745. 41	A	12	4. 16	8. 65	5½-4½	b 'G-y 'G°
*2463. 46	A	8	4. 06	9. 07	2½-2½		2755. 18	A	2	4. 15	8. 63	4½-3½	(185)
2464. 31	A	4	4. 05	9. 06	1½-1½		2739. 74	A	7	4. 15	8. 65	4½-4½	
2462. 82	A	1	4. 05	9. 07	1½-2½		2747. 76	A	7	4. 14	8. 63	3½-3½	
2422. 93	A	2	4. 06	9. 15	4½-3½	b 'F-x 'F°	2732. 41	A	2	4. 14	8. 65	3½-4½	
2421. 90	A	3	4. 05	9. 15	3½-3½	(169)	2688. 41	A	45	4. 16	8. 75	5½-5½	b 'G-x 'G°
2404. 22	A	3	4. 06	9. 19	2½-2½		2697. 51	A	25	4. 15	8. 73	4½-4½	(186)
2403. 62	A	3	4. 05	9. 19	1½-2½		2708. 78	A	65	4. 14	8. 69	3½-3½	
2400. 24	A	15	4. 06	9. 20	4½-4½	b 'F-w 'F°	2709. 31	A	60	4. 13	8. 68	2½-2½	
2403. 87	A	10	4. 05	9. 19	3½-8½	(170)	*2702. 96	A	4wl	4. 16	8. 73	5½-4½	
2411. 01	A	15	4. 06	9. 17	2½-2½		2715. 97	A	3	4. 15	8. 69	4½-3½	
2413. 06	A	8	4. 05	9. 17	1½-1½		2716. 89	A	6	4. 14	8. 68	3½-2½	
2409. 96	A	5	4. 05	9. 17	3½-2½		2682. 95	A	1	4. 15	8. 75	4½-5½	
2413. 64	A	15w	4. 06	9. 17	2½-1½		2690. 41	A	2w	4. 14	8. 73	3½-4½	
2399. 21	A	3	4. 05	9. 20	3½-4½		*2701. 24	A	20	4. 13	8. 69	2½-3½	
2404. 92	A	8	4. 06	9. 19	2½-3½								
2410. 43	A	3	4. 05	9. 17	1½-2½								

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
*2718.08	A	12	4.15	8.69	4½-5½	b 4G-y 1H°	2929.78	A	4	4.36	8.58	1½-2½	a 3P-x 1F°
2711.19	A	20	4.14	8.69	3½-4½	(187)	2881.91	A	45	4.28	8.56	0½-1½	(206)
2689.79	A	10	4.13	8.71	2½-2½	b 4G-y 2F°	2940.97	A	7	4.36	8.56	1½-1½	
						(188)	2889.50	A	35	4.36	8.64	1½-2½	a 3P-y 1D°
2468.67	A	1	4.15	9.15	4½-3½	b 4G-x 2F°	2857.99	A	20	4.28	8.60	0½-1½	(207)
2443.35	A	5	4.14	9.19	3½-2½	(189)	2916.07	A	10	4.36	8.60	1½-1½	
2449.63	A	25	4.16	9.20	5½-4½	b 4G-w 1F°	2360.14	A	10	4.36	9.59	1½-1½	a 3P-x 1P°
2449.95	A	25	4.15	9.19	4½-3½	(190)	2318.49	A	2	4.28	9.60	0½-0½	(208)
2450.37	A	20	4.14	9.17	3½-2½		2356.58	A	4	4.36	9.60	1½-0½	
2446.91	A	15	4.13	9.17	2½-1½		2321.95	A	4	4.28	9.59	0½-1½	
*2445.09	A	10	4.15	9.20	4½-4½		2218.36	A	6	4.36	9.93	1½-2½	a 3P-w 1D°
2444.08	A	7	4.14	9.19	3½-3½		2190.92	A	5	4.28	9.91	0½-1½	(209)
2444.20	A	7	4.13	9.17	2½-2½		*2224.87	A	1	4.36	9.91	1½-1½	
2294.46	A	8	4.13	9.50	2½-2½	b 4G-w 2F°							
						(191)							
2946.81	A	50	4.30	8.49	5½-5½	a 3H-z 2H°	*2949.79	A	10	4.40	8.58	3½-4½	b 3F-x 1F°
2953.70	A	45	4.28	8.45	4½-4½	(192)	*2945.74	A	7w	4.39	8.58	2½-3½	(210)
2969.67	A	15	4.30	8.45	5½-4½		2949.07	A	2	4.40	8.58	3½-3½	
2931.07	A	4	4.28	8.49	4½-5½		2948.20	A	3	4.39	8.58	2½-2½	
							2959.54	A	18	4.39	8.56	2½-1½	
2929.18	A	2	4.28	8.49	4½-3½	a 3H-z 2F°	*2910.64	A	30	4.40	8.64	3½-2½	b 3F-u 1D°
						(193)	2934.30	A	20	4.39	8.60	2½-1½	(211)
2891.40	A	20	4.30	8.57	5½-6½	a 3H-y 1H°	2897.67	A	30	4.40	8.65	3½-4½	b 3F-y 1G°
2924.86	A	2	4.30	8.52	5½-4½	(194)	2911.69	A	35	4.39	8.63	2½-3½	(212)
2832.45	A	60	4.30	8.65	5½-4½	a 3H-y 2G°	*2867.94	A	4w	4.39	8.69	2½-3½	b 3F-x 1G°
2834.24	A	60	4.28	8.63	4½-3½	(195)							(213)
2787.30	A	5	4.30	8.73	5½-4½	a 3H-x 1G°	2836.47	A	30	4.40	8.75	3½-3½	b 3F-y 1F°
2792.79	A	4	4.28	8.69	4½-3½	(196)	*2855.05	A	35	4.39	8.71	2½-2½	(214)
							2833.37	A	8	4.39	8.75	2½-3½	
2809.27	A	6	4.30	8.69	5½-5½	a 3H-y 1H°	*2693.87	A	7w	4.40	8.98	3½-4½	b 3F-x 1G°
2795.32	A	2	4.28	8.69	4½-4½	(197)	*2696.10	A	4	4.39	8.97	2½-3½	(215)
2809.56	A	5	4.30	8.69	5½-4½								
2637.48	A	20	4.30	8.98	5½-4½	a 3H-x 2G°	2639.32	A	8	4.40	9.07	3½-3½	b 3F-w 1D°
2629.58	A	8	4.28	8.97	4½-3½	(198)	2640.00	A	7	4.39	9.07	2½-2½	(216)
2523.76	A	15w	4.30	9.19	5½-6½	a 3H-y 1I°	2596.17	A	40	4.40	9.15	3½-3½	b 3F-x 1F°
2512.38	A	10	4.28	9.19	4½-5½	(199)	2572.11	A	15	4.39	9.19	2½-2½	(217)
2523.93	A	15	4.30	9.19	5½-5½								
2505.86	A	20	4.30	9.22	5½-5½	a 3H-x 2H°	2575.47	A	3	4.40	9.19	3½-3½	b 3F-w 1F°
2510.24	A	20	4.28	9.19	4½-4½	(200)	2579.88	A	4	4.39	9.17	2½-2½	(218)
2521.76	A	5	4.30	9.19	5½-4½		2582.91	A	4w	4.39	9.17	2½-1½	
2503.62	A	3	4.30	9.23	5½-6½	a 3H-z 1K°	2486.66	A	20	4.40	9.36	3½-4½	b 3F-w 1G°
						(201)	2490.07	A	20	4.39	9.35	2½-3½	(219)
2438.46	A	35	4.30	9.36	5½-4½	a 3H-w 2G°	2361.79	A	3	4.40	9.62	3½-2½	b 3F-x 1D°
2433.20	A	25	4.28	9.35	4½-3½	(202)	2350.00	A	2	4.39	9.64	2½-1½	(220)
2427.68	A	4	4.28	9.36	4½-4½								
*2365.26	A	20w	4.30	9.52	5½-5½	a 3H-w 3H°	2181.54	A	4	4.40	10.05	3½-3½	b 3F-v 1F°
2344.54	A	20	4.28	9.54	4½-4½	(203)	2189.24	A	3	4.39	10.03	2½-2½	(221)
2354.59	A	3	4.30	9.54	5½-4½		2191.08	A	2	4.40	10.03	3½-2½	
2355.10	A	3	4.28	9.52	4½-5½		2179.72	A	2	4.39	10.05	2½-3½	
							*2037.26	A	4	4.40	10.45	3½-3½	b 3F-u 1F°
							2038.64	A	2	4.39	10.44	2½-2½	(222)
Vac													
1998.14	A	2	4.28	10.45	4½-3½	a 3H-u 2F°	*1963.00	A	15	4.39	10.68	2½-1½	b 3F-v 1D°
						(204)							(223)
1955.93	A	15	4.30	10.61	5½-4½	a 3H-v 2G°	1791.51	A	2	4.40	11.29	3½-2½	b 3F-u 1D°
*1963.00	A	15	4.28	10.56	4½-3½	(205)	1786.07	A	2	4.39	11.30	2½-1½	(224)
1949.00	A	40	4.28	10.61	4½-4½								

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2968.20	A	3	4.41	8.57	5½-6½	b ¹ H-y ⁴ H°
2987.52	A	3	4.41	8.54	5½-5½	(225)
2958.51	A	2	4.41	8.58	5½-4½	b ¹ H-x ⁴ F°
						(226)
2906.17	A	10	4.41	8.65	5½-4½	b ¹ H-y ² G°
2915.22	A	10	4.40	8.63	4½-3½	(227)
2842.32	A	5	4.41	8.75	5½-5½	b ¹ H-x ⁴ G°
2850.72	A	7	4.40	8.73	4½-4½	(228)
2874.07	A	8	4.40	8.69	4½-4½	b ¹ H-y ¹ H°
						(229)
*2701.24	A	20	4.41	8.98	5½-4½	b ¹ H-x ² G°
						(230)
2582.10	A	20	4.41	9.19	5½-6½	b ¹ H-y ¹ I°
2575.81	A	20	4.40	9.19	4½-5½	(231)
2582.27	A	15	4.41	9.19	5½-5½	
2563.35	A	40	4.41	9.22	5½-5½	b ¹ H-x ¹ H°
2573.54	A	50	4.40	9.19	4½-4½	(232)
2556.97	A	7	4.40	9.22	4½-5½	
2560.99	A	20	4.41	9.23	5½-6½	b ¹ H-x ² K°
						(233)
2492.86	A	30	4.41	9.36	5½-4½	b ¹ H-w ² G°
2492.62	A	40	4.40	9.35	4½-3½	(234)
2486.86	A	1	4.40	9.36	4½-4½	
2416.40	A	40	4.41	9.52	5½-5½	b ¹ H-w ¹ H°
2399.67	A	30	4.40	9.54	4½-4½	(235)
2405.28	A	10	4.41	9.54	5½-4½	
2410.75	A	2	4.40	9.52	4½-5½	
Vac						
1990.79	A	10	4.41	10.61	5½-4½	b ¹ H-v ² G°
Air						
2000.76	A	5	4.40	10.56	4½-3½	(236)
2954.65	A	10	4.48	8.65	4½-4½	a ² G-y ² G°
2957.55	A	5	4.46	8.63	3½-3½	(237)
2972.57	A	8	4.48	8.63	4½-3½	
2939.78	A	3	4.46	8.65	3½-4½	
2888.73	A	40	4.48	8.75	4½-5½	a ² G-x ⁴ G°
2891.20	A	20	4.46	8.73	3½-4½	(238)
2905.57	A	3	4.48	8.73	4½-4½	
2929.44	A	18	4.48	8.69	4½-5½	a ² G-y ¹ H°
2915.28	A	15	4.46	8.69	3½-4½	(239)
2891.06	A	25	4.48	8.75	4½-3½	a ² G-y ² F°
2899.15	A	25	4.46	8.71	3½-2½	(240)
2686.40	A	6	4.48	9.07	4½-3½	a ² G-w ¹ D°
						(241)
*2641.80	A	25	4.48	9.15	4½-3½	a ² G-x ² F°
2607.85	A	10	4.46	9.19	3½-2½	(242)
2601.04	A	8	4.48	9.22	4½-5½	a ² G-x ¹ H°
*2606.53	A	25	4.46	9.19	3½-4½	(243)
2534.49	A	5	4.48	9.35	4½-3½	a ² G-w ² G°
						(244)
2461.93	A	5	4.48	9.49	4½-3½	a ² G-w ² F°
*2445.09	A	10	4.46	9.50	3½-2½	(245)
*2451.63	A	7	4.46	9.49	3½-3½	

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2428.29	A	2	4.46	9.54	3½-4½	a ² G-w ² H°
						(246)
2213.68	A	30	4.48	10.05	4½-3½	a ² G-v ² F°
2215.08	A	20	4.46	10.03	3½-2½	(247)
2205.34	A	2	4.46	10.05	3½-3½	
2061.03	A	3	4.46	10.44	3½-2½	a ² G-u ² F°
2057.95	A	1	4.46	10.45	3½-3½	(248)
2012.74	A	10	4.48	10.61	4½-4½	a ² G-v ² G°
*2020.69	A	10	4.46	10.56	3½-3½	(249)
2027.69	A	8	4.48	10.56	4½-3½	
2838.78	A	65	4.72	9.07	3½-3½	c ⁴ D-w ⁴ D°
*2846.44	A	30	4.73	9.07	2½-2½	(250)
2852.27	A	25	4.74	9.06	1½-1½	
2855.43	A	8	4.74	9.06	0½-0½	
2842.78	A	20	4.72	9.07	3½-2½	
2848.40	A	20d?	4.73	9.06	2½-1½	
2852.67	A	20	4.74	9.06	1½-0½	
2842.43	A	5	4.73	9.07	2½-3½	
2850.29	A	3	4.74	9.07	1½-2½	
2792.49	A	4	4.73	9.15	2½-3½	c ⁴ D-x ² F°
2771.27	A	12	4.74	9.19	1½-2½	(251)
2758.99	A	40	4.72	9.20	3½-4½	c ⁴ D-w ⁴ F°
2768.59	A	50	4.73	9.19	2½-3½	(252)
*2780.30	A	85	4.74	9.17	1½-2½	
2786.46	A	10	4.74	9.17	0½-1½	
2765.13	A	4	4.72	9.19	3½-3½	
2776.65	A	20	4.73	9.17	2½-2½	
2783.84	A	20	4.74	9.17	1½-1½	
2760.53	A	15	4.72	9.20	3½-2½	c ⁴ D-x ⁴ P°
*2746.21	A	50	4.73	9.22	2½-1½	(253)
2734.57	A	15	4.74	9.25	1½-0½	
2763.97	A	12	4.73	9.20	2½-2½	
2749.82	A	20	4.74	9.22	1½-1½	
*2737.09	A	4	4.74	9.25	0½-0½	
2767.62	A	20	4.74	9.20	1½-2½	
2752.37	A	10	4.74	9.22	0½-1½	
2592.32	A	2	4.73	9.49	2½-3½	c ⁴ D-w ² F°
						(254)
2540.48	A	2w	4.74	9.59	1½-1½	c ⁴ D-x ² P°
2538.54	A	2	4.74	9.60	0½-0½	(255)
2927.09	A	50	4.76	8.98	4½-4½	b ² G-x ² G°
*2928.32	A	50	4.75	8.97	3½-3½	(256)
2922.46	A	5	4.75	8.98	3½-4½	
*2812.00	A	85	4.76	9.15	4½-3½	b ² G-x ² F°
2782.59	A	25	4.75	9.19	3½-2½	(257)
2791.70	A	7	4.75	9.17	3½-2½	b ² G-w ⁴ F°
						(258)
2787.90	A	25	4.76	9.19	4½-5½	b ² G-y ¹ I°
						(259)
2765.86	A	20	4.76	9.22	4½-5½	b ² G-x ¹ H°
2781.07	A	25	4.75	9.19	3½-4½	(260)
2609.11	A	1	4.76	9.49	4½-3½	b ² G-w ² F°
2598.06	A	3	4.75	9.50	3½-2½	(261)
2595.55	A	25	4.76	9.52	4½-5½	b ² G-w ¹ H°
2579.12	A	15	4.75	9.54	3½-4½	(262)

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2915.46	A	30	4.92	9.15	4½-3½	c ²G-x ²F°	1939.90	A	5	4.92	11.29	3½-2½	c ²F-u ²D°
2876.66	A	20	4.90	9.19	3½-2½	(263)	1929.96	A	12	4.91	11.30	2½-1½	(285)
2886.38	A	7	4.90	9.17	3½-2½	c ²G-w ²F°							
						(264)							
2865.87	A	50	4.92	9.22	4½-5½	c ²G-x ²H°	Air						
2875.03	A	30	4.90	9.19	3½-4½	(265)	2921.23	A	50	4.96	9.19	6½-6½	b ²I-y ²I°
							2923.67	A	40	4.97	9.19	5½-5½	(286)
2778.06	A	70	4.92	9.36	4½-4½	c ²G-w ²G°	2923.46	A	30	4.97	9.19	5½-6½	
2774.44	A	50	4.90	9.35	3½-3½	(266)	*2897.24	A	10	4.96	9.22	6½-5½	b ²I-x ²H°
2785.32	A	2	4.92	9.35	4½-3½								(287)
2767.26	A	10	4.90	9.36	3½-4½		2876.30	A	40	4.96	9.25	6½-7½	b ²I-z ²K°
*2697.90	A	30	4.92	9.49	4½-3½	c ²G-w ²F°	*2896.45	A	40	4.97	9.23	5½-6½	(288)
2679.89	A	15	4.90	9.50	3½-2½	(267)	2894.24	A	25	4.96	9.23	6½-6½	
2683.45	A	20	4.92	9.52	4½-5½	c ²G-w ²H°	2710.92	A	65	4.96	9.52	6½-5½	b ²I-w ²H°
2659.73	A	8	4.90	9.54	3½-4½	(268)	2698.85	A	30	4.97	9.54	5½-4½	(289)
							2712.85	A	10	4.97	9.52	5½-5½	
2613.51	A	12	4.90	9.62	3½-2½	c ²G-x ²D°							
						(269)							
2228.82	A	5	4.92	10.45	4½-3½	c ²G-u ²F°	2914.38	A	2	4.99	9.22	0½-1½	a ²S-x ²P°
2225.44	A	3	4.90	10.44	3½-2½	(270)	*2897.24	A	10	4.99	9.25	0½-0½	(290)
2221.86	A	12	4.90	10.45	3½-3½		2891.87	A	20	4.99	9.26	0½-1½	a ²S-u ²P°
*2167.81	A	3	4.92	10.61	4½-4½	c ²G-v ²G°	2902.86	A	10	4.99	9.24	0½-0½	(291)
2178.46	A	3	4.90	10.56	3½-3½	(271)	2680.32	A	15	4.99	9.59	0½-1½	a ²S-x ²P°
							2675.74	A	15	4.99	9.60	0½-0½	(292)
Vac							2351.96	A	4	4.99	10.24	0½-1½	a ²S-w ²P°
1950.06	A	50	4.92	11.25	4½-4½	c ²G-u ²G°	2355.62	A	3	4.99	10.23	0½-0½	(293)
1949.22	A	35	4.90	11.23	3½-3½	(272)							
1932.64	A	5	4.90	11.29	3½-2½	c ²G-u ²D°							
						(273)							
Air							2941.96	A	35	5.30	9.49	2½-3½	b ²D-w ²F°
2919.93	A	2w	4.92	9.15	3½-3½	c ²F-x ²F°	2940.22	A	25	5.31	9.50	1½-2½	(294)
						(274)	2871.45	A	20	5.30	9.59	2½-1½	b ²D-x ²P°
2902.60	A	7	4.92	9.17	3½-2½	c ²F-w ²F°	*2873.46	A	65	5.31	9.60	1½-0½	(295)
*2895.02	A	18	4.91	9.17	2½-1½	(275)	2853.26	A	30	5.30	9.62	2½-2½	b ²D-x ²D°
2782.13	A	4	4.92	9.36	3½-4½	c ²F-w ²G°	2846.32	A	25	5.31	9.64	1½-1½	(296)
2778.94	A	10	4.91	9.35	2½-3½	(276)	2594.32	A	7	5.30	10.05	2½-3½	b ²D-v ²F°
*2789.39	A	40	4.92	9.35	3½-3½		*2613.82§§	A	3	5.31	10.03	1½-2½	(297)
2701.75	A	12	4.92	9.49	3½-3½	c ²F-w ²F°	2497.87	A	10	5.30	10.24	2½-1½	b ²D-w ²P°
2684.09	A	8	4.91	9.50	2½-2½	(277)	2507.57	A	10	5.31	10.23	1½-0½	(298)
*2693.87	A	7w	4.92	9.50	3½-2½		2503.41	A	2	5.31	10.24	1½-1½	
*2691.99	A	3w	4.91	9.49	2½-3½		2392.80	A	4	5.30	10.45	2½-3½	b ²D-u ²F°
2673.49	A	3	4.92	9.54	3½-4½	c ²F-w ²H°	2402.07	A	5	5.31	10.44	1½-2½	(299)
						(278)							
2632.77	A	5	4.91	9.59	2½-1½	c ²F-x ²P°							
						(279)							
2626.78	A	20	4.92	9.62	3½-2½	c ²F-x ²D°	2992.59	A	7	5.47	9.59	0½-1½	b ²S-x ²P°
2605.63	A	15	4.91	9.64	2½-1½	(280)	2986.87	A	8	5.47	9.60	0½-0½	(300)
2617.50	A	3w	4.91	9.62	2½-2½		2589.05	A	15	5.47	10.24	0½-1½	b ²S-w ²P°
2465.78	A	18	4.92	9.93	3½-2½	c ²F-w ²D°	2593.49	A	8	5.47	10.23	0½-0½	(301)
2465.61	A	18	4.91	9.91	2½-1½	(281)							
2457.59	A	2	4.91	9.93	2½-2½		2881.86	A	55	5.65	9.93	2½-2½	c ²D-w ²D°
2405.72	A	1	4.92	10.05	3½-3½	c ²F-v ²F°	2887.77	A	20	5.64	9.91	1½-1½	(302)
2409.45	A	1	4.91	10.03	2½-2½	(282)	2800.16	A	20	5.65	10.05	2½-3½	c ²D-v ²F°
2417.31	A	2	4.92	10.03	3½-2½		2811.05	A	15	5.64	10.03	1½-2½	(303)
2231.45	A	15	4.92	10.45	3½-3½	c ²F-u ²F°	2688.14	A	5	5.65	10.24	2½-1½	c ²D-w ²P°
2228.34	A	15	4.91	10.44	2½-2½	(283)	m2688.50	P	Cr II	5.64	10.23	1½-0½	(304)
2143.86	A	5	4.92	10.68	3½-2½	c ²F-v ²D°	2683.73	A	4	5.64	10.24	1½-1½	
2137.50	A	7	4.91	10.68	2½-1½	(284)							

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2566.85	A	10	5.65	10.45	2½-3½	c ²D-u ²F°	*2559.71	A	50wl	6.00	10.83	3½-4½	z ²P°-f ²D
2567.59	A	8	5.64	10.44	1½-2½	(305)	2561.81	A	15w	5.99	10.80	2½-3½	(317)
							*2562.37	A	25wl	5.97	10.79	1½-2½	
*2451.63	A	7	5.65	10.68	2½-2½	c ²D-v ²D°	2571.10	A	3wl	6.00	10.80	3½-3½	
2447.76	A	3w	5.64	10.68	1½-1½	(306)	*2568.51	A	20wl	5.99	10.79	2½-2½	
							2566.27	A	8wl	5.97	10.78	1½-1½	
							*2577.74	A	10w	6.00	10.79	3½-2½	
							2572.40	A	12wl	5.99	10.78	2½-1½	
							2568.86	A	4w	5.97	10.78	1½-0½	
2817.00	A	15wl	5.89	10.28	5½-4½	z ²F°-e ²D							
2810.03	A	20wl	5.86	10.25	4½-3½	(307)	2542.73	A	10wl	6.00	10.86	3½-4½	z ²P°-e ²F
2803.96	A	10wl	5.83	10.23	3½-2½								(318)
2798.48	A	4wl	5.81	10.22	2½-1½		*2545.87	A	7wl	5.99	10.83	2½-3½	
2793.51	A	3wl	5.79	10.21	1½-0½								
2794.39	A	5wl	5.86	10.28	4½-4½		2555.07	A	4wh	6.00	10.82	1½-2½	
2791.37	A	3w	5.83	10.25	3½-3½		2550.54	A	1w	5.97	10.81	1½-1½	
2787.13	A	2w	5.78	10.21	0½-0½								
2538.31	A	100wl	5.89	10.76	5½-6½	z ²F°-c ²G	*2307.56	A	10wl	6.00	11.35	3½-2½	z ²P°-e ²S
2529.90	A	75wl	5.86	10.74	4½-5½	(308)	2300.08	A	8wl	5.99	11.35	2½-2½	(319)
2523.24	A	150wl	5.83	10.72	3½-4½		2295.20	A	4wl	5.97	11.35	1½-2½	
2518.29	A	100wl	5.81	10.71	2½-3½								
2515.06	A	55wl	5.79	10.70	1½-2½								
2513.66	A	50wl	5.78	10.69	0½-1½		2526.30	A	15wl	6.00	10.92	2½-2½	z ²P°-e ²P
2548.42	A	5w	5.89	10.74	5½-5½		2519.61	A	15wl	6.02	10.98	0½-0½	(320)
2538.45	A	20wl	5.86	10.72	4½-4½		2536.02	A	2w	6.05	10.93	1½-0½	
2530.20	A	150wl*	5.83	10.71	3½-3½		2504.55	A	3w	6.05	10.92	1½-2½	
2523.62	A	30wl	5.81	10.70	2½-2½								
2518.84	A	30wl	5.79	10.69	1½-1½								
2545.51	A	1w	5.86	10.71	4½-3½								
2535.60	A	1wh	5.83	10.70	3½-2½		2992.96	A	10wl	6.15	10.28	4½-4½	z ²D°-e ²D
2527.40	A	2wl	5.81	10.69	2½-1½		2993.54	A	7wl	6.13	10.25	3½-3½	(321)
2485.41	A	15w	5.86	10.83	4½-4½	z ²F°-f ²D	*3010.92	A	4wl	6.15	10.21	0½-0½	
2470.87	A	12wl	5.83	10.83	3½-4½	(309)							
2469.95	A	10wl	5.81	10.80	2½-3½		*3007.98	A	6wl	6.13	10.25	4½-3½	
							*3017.78	A	10w	6.12	10.21	1½-0½	
2483.74	A	40wl	5.89	10.86	5½-5½	z ²F°-e ²F	2975.80	A	4w	6.13	10.28	3½-4½	
2469.40	A	20wl	5.86	10.86	4½-4½	(310)	2999.00	A	1wl	6.14	10.25	2½-3½	
2466.48	A	25wl	5.83	10.83	3½-3½		3000.65	A	2wl	6.12	10.23	1½-2½	
2460.77	A	15wh	5.81	10.82	2½-2½		3004.77	A	2wl	6.11	10.22	0½-1½	
2436.94	A	8w	5.79	10.81	1½-1½								
*2455.15	A	12w	5.78	10.81	0½-0½		2706.06	A	8wl	6.15	10.71	4½-3½	z ²D°-e ²P
2487.03	A	12wl	5.89	10.86	5½-4½		*2691.99	A	3w	6.13	10.71	3½-3½	(322)
2455.00	A	2w	5.83	10.86	3½-4½		*2702.96	A	4wl	6.14	10.70	2½-2½	
*2455.15	A	12w	5.81	10.83	2½-3½		2694.43	A	4wl	6.12	10.70	1½-1½	
2452.04	A	4w	5.78	10.81	0½-1½		2692.64	A	1w	6.12	10.70	1½-2½	
2933.60	A	12	5.85	10.05	2½-3½	d ²D-v ²F°	*2641.30	A	15wl	6.15	10.83	4½-4½	z ²D°-f ²D
2952.45	A	12	5.85	10.03	1½-2½	(311)	2639.91	A	7wl	6.13	10.80	3½-3½	(323)
							2651.42	A	4wl	6.14	10.79	2½-2½	
*2810.89	A	6	5.85	10.24	2½-1½	d ²D-u ²P°	2648.31	A	1w	6.11	10.78	0½-0½	
*2817.57	A	8	5.85	10.23	1½-0½	(312)	2647.04	A	2w	6.13	10.79	3½-2½	
2812.31	A	2	5.85	10.24	1½-1½		2648.30	A	8wl	6.12	10.78	1½-0½	
							2627.95	A	35wl	6.13	10.83	3½-4½	
2553.33	A	3	5.85	10.68	2½-2½	d ²D-v ²D°	*2641.30	A	15wl	6.12	10.79	1½-2½	
2554.23	A	4wh	5.85	10.68	1½-1½	(313)	2640.45	A	2w	6.11	10.78	0½-1½	
2268.34	A	4	5.85	11.29	2½-2½	d ²D-u ²D°	2619.59	A	75wl	6.15	10.86	4½-5½	z ²D°-e ²F
2262.58	A	2	5.85	11.30	1½-1½	(314)	2610.04	A	20wl	6.13	10.86	3½-4½	(324)
							2627.17	A	3w	6.14	10.83	2½-3½	
2907.00	A	4w	5.99	10.23	2½-2½	z ²P°-e ²D	*2623.82	A	10wl	6.12	10.82	1½-2½	
*2893.50	A	4wl	5.99	10.25	2½-3½	(315)							
2909.13	A	2wl	5.97	10.22	1½-1½		2623.20	A	40wl	6.11	10.81	0½-1½	
2918.93	A	1wl	6.00	10.23	3½-2½		2623.00	A	5wl	6.15	10.86	4½-4½	
2916.94	A	2wl	5.99	10.22	2½-1½		2633.50	A	10w	6.13	10.83	3½-3½	
							2628.72	A	2w	6.12	10.81	1½-1½	
2620.48	A	50wl	6.00	10.71	3½-3½	z ²P°-e ²P	2629.42	A	4wl	6.13	10.82	3½-2½	
2617.03	A	1w	5.99	10.70	2½-2½	(316)	2638.53	A	3wl	6.14	10.81	2½-1½	
2612.34	A	7w	5.97	10.70	1½-1½		2632.36	A	20wl	6.12	10.81	1½-0½	
2626.69	A	15w	6.00	10.70	3½-2½								
2618.63	A	15wl	5.99	10.70	2½-1½		2939.44	A	20	6.25	10.45	3½-3½	d ²F-u ²F°
2610.81	A	50wl	5.99	10.71	2½-3½		2947.50	A	25	6.26	10.44	2½-2½	(325)
2610.70	A	40wl	5.97	10.70	1½-2½		*2945.74	A	7w	6.25	10.44	3½-2½	
							2834.28	A	35	6.25	10.61	3½-4½	d ²F-v ²G°
							2865.65	A	20	6.26	10.56	2½-3½	(326)

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
*2789.39	A	40	6.25	10.68	3½-2½	d ² F - ² D°	2869.72	A	3wl	6.76	11.06	3½-3½	z ⁴ D° - f ⁴ D
2790.54	A	1	6.26	10.68	2½-1½	(327)	*2868.63	A	4wl	6.74	11.05	2½-2½	(332)
2790.94	A	5	6.26	10.68	2½-2½		2869.61	A	3wl	6.73	11.03	1½-1½	
							2868.47	A	2wl	6.72	11.02	0½-0½	
2452.71	A	18	6.25	11.29	3½-2½	d ² F - u ² D°	2771.89	A	20wl	6.76	11.22	3½-4½	z ⁴ D° - e ⁴ F
2446.11	A	10	6.26	11.30	2½-1½	(328)	2769.29	A	8wl	6.74	11.20	2½-3½	(333)
2453.90	A	1	6.26	11.29	2½-2½		2769.92	A	10wl	6.73	11.18	1½-2½	
							2769.70	A	3wl	6.72	11.17	0½-1½	
							2781.55	A	4wl	6.76	11.20	3½-3½	
							2776.00	A	3wl	6.73	11.17	1½-1½	
2661.22	A	50w	6.41	11.05	4½-5½	z ⁴ F° - e ⁴ G							
2663.28	A	30wl	6.39	11.03	3½-4½	(329)							
2666.58	A	30wl	6.38	11.01	2½-3½								
*2667.89	A	25wl	6.37	10.99	1½-2½								
2674.26	A	7w	6.41	11.03	4½-4½		2744.59	A	25	6.75	10.61	4½-4½	e ³ G - v ³ G°
2674.07	A	8w	6.39	11.01	3½-3½		2735.76	A	12	6.72	10.56	3½-3½	(334)
2673.97	A	8w	6.38	10.99	2½-2½								
2653.25	A	4wl	6.41	11.06	4½-3½	z ⁴ F° - f ⁴ D	2415.23	A	5W	7.90	13.01	6½-5½	z ⁴ H° - f ⁴ G
*2652.78	A	3wl	6.39	11.05	3½-2½	(330)	2408.02	A	3w	7.88	13.01	5½-4½	(335)
2654.02	A	4wl	6.38	11.03	2½-1½		2404.72	A	2w	7.88	13.01	5½-5½	
*2652.78	A	3wl	6.37	11.02	1½-0½								
2642.60	A	2w	6.39	11.06	3½-3½								
2569.40	A	15wl	6.41	11.22	4½-4½	z ⁴ F° - e ⁴ F	2517.36	A	20w	8.11	13.01	5½-5½	z ⁴ G° - f ⁴ G
2567.50	A	5w	6.39	11.20	3½-3½	(331)	2500.21	A	7w	8.07	13.01	4½-4½	(336)
*2568.51	A	20wl	6.38	11.18	2½-2½		2520.83	A	20wl	8.11	13.01	5½-4½	
2568.07	A	3w	6.37	11.17	1½-1½		2496.81	A	40wl	8.07	13.01	4½-5½	
*2577.74	A	10w	6.41	11.20	4½-3½								
2576.45	A	2w	6.39	11.18	3½-2½								
							*2632.54	A	15wl	{8.33 8.32	13.01	4½-5½ 3½-4½	y ⁴ F° - f ⁴ G (337)

Strongest Unclassified Lines of Cr II

Air						Air							
2934.13	A	10				2587.42	A	35					
2913.50	A	10				2585.60	A	15					
2892.74	A	18				2584.83	A	10wl					
2885.29	A	10				2580.72	A	10					
2874.51	A	10				2555.47	A	75wl					
2854.14	A	20wd?				2547.50	A	20wl					
2839.23	A	12				2532.65	A	20w					
2827.95	A	15				2525.35	A	20wl					
2824.54	A	12				2524.55	A	15wl					
2808.02	A	20				2509.10	A	12wl					
2798.65	A	35				2502.16	A	12w					
2760.83	A	15				2496.60	A	15w					
2747.94	A	12				2494.26	A	10w					
2689.79	A	10				2493.08	A	15w					
2657.53	A	15wl				2490.75	A	25wl					
2652.00	A	30wl				2489.67	A	20wl					
2635.75	A	10w				2489.46	A	15w					
2634.27	A	12w				2488.30	A	12w					
2618.77	A	12w				2479.57	A	20wl					
2616.18	A	50wl				2478.78	A	20wl					
2614.57	A	50wl				2477.70	A	15wl					
2613.14	A	10wl				2477.00	A	12wl					
2603.00	A	10w				2474.90	A	20wl					
2596.03	A	25				2460.55	A	10w					
2590.37	A	20wl				2284.13	A	10					
						2193.11	A	10					

Cr III

I P 30.97 Anal B List C September 1951

REFERENCES

A T L. Moore, Jr., unpublished material (Sept. 1951). W L, I, T
 M. A. Catalán, unpublished material (March 1951). I P
 * and §§ = Blend Cr II and Cr III

Cr III

Cr III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1036.03	A	100	0.07	11.99	4-4	$a^3D - z^3D^\circ \uparrow$	969.26	A	40	2.16	14.90	6-5	$a^3H - z^3G^\circ \uparrow$
1037.80	A	20	0.04	11.94	3-3	(1)	967.59	A	10	2.15	14.91	5-4	(11)
1040.17	A	30	0.07	11.94	4-3		966.28	A	8	2.13	14.91	4-3	
1041.34	A	15	0.04	11.90	3-2								
*1033.69	A	100	0.04	11.99	3-4								
1035.93	A	50	0.02	11.94	2-3								
1040.05	A	20	0.00	11.87	0-1								
1030.47	A	60	0.07	12.05	4-5	$a^3D - z^3F^\circ \uparrow$	1279.91	A	20	2.29	11.94	4-3	$a^3F - z^3D^\circ \uparrow$
1030.89	A	30	0.04	12.02	3-4	(2)	1284.09	A	20	2.29	11.90	3-2	(12)
1033.23	A	50	0.07	12.02	4-4		1287.05	A	40	2.28	11.87	2-1	
1033.45	A	50	0.04	11.99	3-3		1264.21	A	85	2.29	12.06	4-3	$a^3F - z^3D^\circ \uparrow$
*1033.69	A	100	0.02	11.96	2-2		1269.11	A	25	2.29	12.01	3-2	(13)
1033.99	A	20	0.01	11.95	1-1		1271.85	A	20	2.28	11.98	2-1	
1035.77	A	20	0.07	11.99	4-8								
1035.57	A	25	0.04	11.96	3-2		1221.90	A	40	2.29	12.40	4-5	$a^3F - z^3G^\circ$
1035.29	A	25	0.02	11.95	2-1		1225.65	A	30	2.29	12.36	3-4	(14)
							1228.65	A	30	2.28	12.33	2-3	
							1226.72	A	20	2.29	12.36	4-4	
							1239.53	A	15	2.29	12.33	3-3	
1027.48	A	10	0.04	12.06	3-3	$a^3D - z^3D^\circ \uparrow$							
1029.57	A	10	0.02	12.01	2-2	(3)							
1028.33	A	30	0.01	12.01	1-2		1197.37	A	20	2.29	12.60	4-4	$a^3F - z^3F^\circ \uparrow$
1030.10	A	20	0.00	11.98	0-1		1201.42	A	15	2.29	12.86	3-2	(15)
							1204.93	A	20	2.28	12.52	2-2	
924.07	A	20	0.07	13.43	4-3	$a^3D - z^3P^\circ \uparrow$							
925.03	A	20	0.04	13.39	3-2	(4)							
925.35	A	15	0.02	13.36	2-1		1072.13	A	20	2.29	13.81	4-5	$a^3F - y^3G^\circ \uparrow$
922.19	A	15	0.04	13.43	3-3		1073.74	A	20	2.29	13.78	3-4	(16)
923.55	A	20	0.02	13.39	2-2		1076.15	A	20	2.28	13.75	2-3	
924.32	A	20	0.01	13.36	1-1								
							1066.23	A	50	2.29	13.87	4-4	$a^3F - y^3F^\circ \uparrow$
							1064.32	A	30	2.29	13.88	3-3	(17)
							1064.43	A	30	2.28	13.88	2-2	
							*1065.12	A	15d?	2.29	13.88	4-3	
1268.01	A	25	2.20	11.94	2-3	$a^3P - z^3D^\circ$							
1262.34	A	30	2.12	11.90	1-2	(5)							
1259.80	A	20	2.07	11.87	0-1		1016.41	A	10	2.29	14.44	4-4	$a^3F - z^3F^\circ$
1273.31	A	15	2.20	11.90	2-2		1020.94	A	20	2.29	14.39	4-3	(18)
1266.14	A	15	2.12	11.87	1-1		1021.64	A	15	2.29	14.37	3-2	
1252.61	A	50	2.20	12.06	2-3	$a^3P - z^3D^\circ$	999.84	A	20	2.29	14.64	4-3	$a^3F - y^3D^\circ \uparrow$
1247.86	A	20	2.12	12.01	1-2	(6)	*1000.86	A	40d?	2.29	14.62	3-2	(19)
1245.23	A	15	2.07	11.98	0-1								
1258.55	A	20	2.20	12.01	2-2								
1251.42	A	15	2.12	11.98	1-1								
1206.38	A	60	2.16	12.40	6-5	$a^3H - z^3G^\circ \uparrow$	1259.02	A	40	2.59	12.40	5-5	$a^3G - z^3G^\circ \uparrow$
1209.13	A	80	2.15	12.36	5-4	(7)	1261.86	A	40	2.57	12.36	4-4	(20)
1211.12	A	80	2.13	12.33	4-3		1263.61	A	35	2.56	12.33	3-3	
1060.15	A	60	2.16	13.81	6-5	$a^3H - y^3G^\circ \uparrow$	1232.96	A	50	2.59	12.60	5-4	$a^3G - z^3F^\circ$
1061.04	A	60	2.15	13.78	5-4	(8)	1236.20	A	40	2.57	12.56	4-3	(21)
1062.68	A	50	2.13	13.75	4-3		1238.51	A	40	2.56	12.52	3-2	
							1230.80	A	20	2.57	12.60	4-4	
							1233.92	A	20	2.56	12.56	3-3	
1017.14	A	50	2.16	14.30	6-6	$a^3H - y^3H^\circ \uparrow$	1117.19	A	30	2.59	13.64	5-6	$a^3G - z^3H^\circ$
1017.57	A	50	2.15	14.28	5-5	(9)	1122.43	A	15	2.57	13.57	4-5	(22)
1017.31	A	50	2.13	14.27	4-4		1125.73	A	20	2.56	13.52	3-4	
*1000.86	A	40d?	2.13	14.47	4-5	$a^3H - z^3H^\circ$	1100.61	A	30	2.59	13.81	5-5	$a^3G - y^3G^\circ \uparrow$
						(10)	1101.43	A	30	2.57	13.78	4-4	(23)
							1102.88	A	30	2.56	13.75	3-3	

Cr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1045.14	A	40	2.57	14.39	4-3	$a^3G - x^3F^{\circ}\uparrow$
1045.06	A	40	2.56	14.37	3-2	(24)
1040.41	A	25	2.57	14.44	4-4	
1040.53	A	40	2.59	14.46	5-4	$a^3G - y^1G^{\circ}\uparrow$
						(25)
1002.96	A	30	2.50	14.90	5-5	$a^3G - x^3G^{\circ}\uparrow$
1001.04	A	40	2.57	14.91	4-4	(26)
999.37	A	20	2.56	14.91	3-3	
927.16	A	20	2.59	15.91	5-4	$a^3G - w^3F^{\circ}$
926.52	A	15	2.57	15.90	4-3	(27)
925.49	A	15	2.56	15.89	3-2	
1309.34	A	20	3.18	12.60	3-4	$a^3D - z^3F^{\circ}\uparrow$
1316.40	A	20	3.18	12.56	2-3	(28)
1322.83	A	10	3.19	12.52	1-2	
1154.12	A	15	3.18	13.87	3-4	$a^3D - y^3F^{\circ}$
1153.60	A	15	3.18	13.88	2-3	(29)
1155.39	A	15	3.19	13.88	1-2	
1113.26	A	10	3.18	14.26	3-3	$a^3D - y^3D^{\circ}\uparrow$
1118.55	A	20	3.18	14.22	2-2	(30)
1125.27	A	10	3.19	14.16	1-1	
1095.96	A	5	3.18	14.44	3-4	$a^3D - x^3F^{\circ}\uparrow$
1101.91	A	15	3.18	14.39	2-3	(31)
1104.44	A	15	3.19	14.37	1-2	
1076.74	A	20	3.18	14.64	3-3	$a^3D - w^3D^{\circ}\uparrow$
1079.43	A	15	3.18	14.62	2-2	(32)
1315.00	A	10	5.07	14.46	3-4	$a^1F - y^1G^{\circ}$
						(33)
1700.29	A	20	5.34	12.60	4-4	$b^3F - z^3F^{\circ}\uparrow$
1711.63	A	20	5.35	12.56	3-3	(34)
1720.00	A	8	5.35	12.52	2-2	
1383.79	A	25	5.34	14.26	4-3	$b^3F - y^3D^{\circ}\uparrow$
1391.61	A	15	5.35	14.22	3-2	(35)
*1400.34§§	A	15	5.35	14.16	2-1	
1357.20	A	15	5.34	14.44	4-4	$b^3F - x^3F^{\circ}\uparrow$
1365.94	A	7	5.35	14.39	3-3	(36)
1365.29	A	20	5.34	14.39	4-3	
1368.60	A	15	5.35	14.37	3-2	
1291.77	A	25	5.34	14.90	4-5	$b^3F - x^3G^{\circ}\uparrow$
1291.53	A	25	5.35	14.91	3-4	(37)
1290.93	A	20	5.35	14.91	2-3	
Air						
2073.36	A	15 H	6.11	12.06	2-3	$b^3P - z^3D^{\circ}$
2066.18	A	15	6.04	12.01	1-2	(38)
2069.00	A	20	6.02	11.98	0-1	
2226.72	A	200	6.22	11.77	5-6	$a^3F - z^3G^{\circ}\uparrow$
2235.91	A	200	6.18	11.70	4-5	(39)
2244.10	A	150	6.15	11.65	3-4	
2251.45	A	80	6.13	11.61	2-3	
*2257.92§§	A	50d	6.11	11.58	1-2	
2251.95	A	30	6.22	11.70	5-5	
2257.33	A	20	6.18	11.65	4-4	
2261.64	A	40	6.15	11.61	3-3	
2264.88	A	40	6.13	11.58	2-2	

Cr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2141.15	A	100	6.22	11.99	5-4	$a^3F - z^3D^{\circ}\uparrow$
2144.15	A	80	6.18	11.94	4-3	(40)
2147.16	A	50	6.15	11.90	3-2	
2148.85	A	40	6.13	11.87	2-1	
2159.73	A	20	6.11	11.82	1-0	
2117.53	A	100	6.22	12.05	5-5	$a^3F - z^3F^{\circ}$
*2114.87	A	100	6.18	12.02	4-4	(41)
2113.83	A	100	6.15	11.99	3-3	
2113.73	A	100	6.13	11.96	2-2	
2114.26	A	50	6.11	11.95	1-1	
2129.23	A	5	6.22	12.02	5-4	
2125.62	A	15	6.18	11.99	4-3	
2122.75	A	10	6.15	11.96	3-2	
2120.35	A	25	6.13	11.95	2-1	
2103.32	A	20	6.18	12.05	4-5	
2103.22	A	20	6.15	12.02	3-4	
2104.85	A	20	6.13	11.99	2-3	
2107.68	A	20	6.11	11.96	1-2	
2544.37	A	80	7.09	11.94	4-3	$c^3F - z^3D^{\circ}\uparrow$
2537.73	A	80	7.04	11.90	3-2	(42)
2530.99	A	80	6.99	11.87	2-1	
2483.06	A	100	7.09	12.06	4-3	$c^3F - z^3D^{\circ}$
2479.77	A	100	7.04	12.01	3-2	(43)
2472.88	A	100	6.99	11.98	2-1	
2456.83	A	50	7.04	12.06	3-3	
2458.98	A	30	6.99	12.01	2-2	
2324.88	A	150	7.09	12.40	4-5	$c^3F - z^3G^{\circ}$
2319.07	A	100	7.04	12.36	3-4	(44)
*2314.63§§	A	80d	6.99	12.33	2-3	
2342.46	A	15	7.09	12.36	4-4	
2333.09	A	25	7.04	12.33	3-3	
2237.59	A	150	7.09	12.60	4-4	$c^3F - z^3F^{\circ}\uparrow$
2233.81	A	100	7.04	12.56	3-3	(45)
2231.81	A	100	6.99	12.52	2-2	
2255.44	A	15	7.09	12.56	4-3	
2248.94	A	15	7.04	12.52	3-2	
Vac						
1837.05	A	10	7.09	13.81	4-5	$c^3F - y^3G^{\circ}$
1829.72	A	10	7.04	13.78	3-4	(46)
1827.26	A	30	6.99	13.75	2-3	
Air						
2203.22	A	100	7.83	13.43	3-3	$a^3P - z^3P^{\circ}$
2207.46	A	40	7.80	13.39	2-2	(47)
*2211.21	A	25	7.78	13.36	1-1	
2219.58	A	40	7.83	13.39	3-2	
2217.75	A	15	7.80	13.36	2-1	
2191.24	A	40	7.80	13.43	2-3	
*2200.98	A	20	7.78	13.39	1-2	
2139.11	A	80	7.83	13.60	3-4	$a^3P - y^3D^{\circ}$
2147.56	A	50	7.80	13.55	2-3	(48)
2154.62	A	30	7.78	13.51	1-2	
2159.08	A	40	7.83	13.55	3-3	
2160.98	A	10	7.80	13.51	2-2	
2163.86	A	50	7.78	13.49	1-1	
2172.57	A	4	7.83	13.51	3-2	
2168.23	A	30	7.78	13.47	1-0	
2001.94	A	25	7.83	13.99	3-2	$a^3P - z^3S^{\circ}\uparrow$
Vac						(49)
1992.72	A	25	7.80	13.99	2-2	

Cr III—Continued

Cr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
*2257.53	A	30d	8.18	13.64	5-6	$b^1G - z^1H^0$ (50)	2327.67	A	20	8.82	14.12	5-4	$a^1H - z^1G^0$ (62)
2276.38	A	100	8.15	13.57	4-5								
2290.66	A	80	8.13	13.52	3-4		2258.59	A	30	8.82	14.28	5-5	$a^1H - y^1H^0$ (63)
2286.55	A	15	8.18	13.57	5-5								
2297.89	A	25	8.15	13.52	4-4		*2183.71	A	50	8.82	14.47	5-5	$a^1H - z^1H^0$ (64)
2190.76	A	100	8.18	13.81	5-5	$b^1G - y^1G^0$ (51)							
2191.58	A	100	8.15	13.78	4-4								
2197.89	A	100	8.13	13.75	3-3								
*2200.98	A	20	8.18	13.78	5-4		2616.50	A	80	8.86	13.57	5-5	$b^1H - z^1H^0$ (65)
2204.57	A	30	8.15	13.75	4-3		2640.73	A	100	8.85	13.52	4-4	
2181.41	A	15	8.15	13.81	4-5								
*2185.01	A	100	8.13	13.78	3-4		2500.27	A	40h	8.87	13.81	6-5	$b^1H - y^1G^0$ (66)
2166.25	A	60	8.18	13.87	5-4	$b^1G - y^1F^0$ (52)	2505.04	A	10	8.86	13.78	5-4	
2152.76	A	50	8.15	13.88	4-3		2488.26	A	60	8.85	13.81	4-5	
2149.48	A	50	8.13	13.88	3-2								
2157.17	A	100	8.15	13.87	4-4		2273.30	A	100	8.87	14.30	6-6	$b^1H - y^1H^0$ (67)
2146.36	A	10	8.13	13.88	3-3		2275.43	A	80	8.86	14.28	5-5	
							2277.47	A	80	8.85	14.27	4-4	
2014.68	A	20	8.18	14.30	5-6	$b^1G - y^1H^0$ (53)	2170.70	A	100	8.87	14.56	6-7	$b^1H - z^1I^0$ (68)
2013.79	A	20	8.15	14.28	4-5		*2185.01	A	100	8.86	14.50	5-6	
2012.23	A	12	8.13	14.27	3-4		2198.62	A	100	8.85	14.46	4-5	
							*2201.46	A	15	8.86	14.46	5-5	
2309.99	A	50	8.47	13.81	4-5	$c^1G - y^1G^0$ (54)	2047.23	A	80	8.87	14.90	6-5	$b^1H - z^1G^0$ (69)
*2183.71	A	50	8.47	14.12	4-4	$c^1G - z^1G^0$ (55)	2039.63	A	50	8.86	14.91	5-4	
2060.18	A	15	8.47	14.46	4-4	$c^1G - y^1G^0$ (56)	2036.39	A	60	8.85	14.91	4-3	
2545.17	A	50	8.68	13.53	2-2	$d^1P - z^1P^0$ (57)	2145.62	A	12	10.15	15.91	4-4	$d^1F - w^1F^0$ (70)
							2121.69	A	30	10.08	15.90	3-3	
2208.70	A	60	8.68	14.26	2-3	$d^1P - y^1D^0$ (58)	2148.65	A	50	10.15	15.90	4-3	
2201.93	A	20	8.61	14.22	1-2		2118.65	A	20	10.08	15.91	3-4	
2211.46	A	10	8.58	14.16	0-1								
2435.32	A	30	8.80	13.87	3-4	$b^1D - y^1F^0$ (59)	Vac						
2413.65	A	30	8.76	13.88	1-2		1707.43	A	80	11.77	19.00	6-7	$z^1G^0 - e^1H^1$ (71)
2429.75	A	30	8.80	13.88	3-3		1701.48	A	60	11.70	18.96	5-6	
							1696.64	A	60	11.65	18.93	4-5	
2190.09	A	50	8.80	14.44	3-4	$b^1D - z^1F^0$ (60)	1692.89	A	60	11.61	18.90	3-4	
*2201.46	A	15	8.76	14.37	1-2		1690.28	A	30	11.58	18.88	2-3	
2114.53	A	50	8.80	14.64	3-3	$b^1D - w^1D^0$ (61)	1679.25	A	30	11.77	19.12	6-6	$z^1G^0 - e^1G^1$ (72)
2123.53	A	80	8.76	14.57	1-1								
2122.44	A	40	8.80	14.62	3-2		1588.87	A	20	11.77	19.53	6-5	$z^1G^0 - f^1F^1$ (73)
2131.95	A	20	8.79	14.57	2-1		1584.60	A	40	11.70	19.49	5-4	
							1580.73	A	20	11.65	19.46	4-3	
							1577.14	A	10	11.61	19.44	3-2	

Strongest Unclassified Lines of Cr III

Air						Air							
2918.57	A	40H				2217.51	A	40					
2655.28	A	40											
2647.50	A	50				Vac							
2626.08	A	100				1766.92	A	30					
2577.96	A	40				1707.78	A	40					
						1603.19	A	30					
2564.76	A	80				1231.88	A	30					
2506.41	A	80				1221.07	A	40					
2404.72	A	40											
2340.61	A	60				1187.65	A	30					
2295.55	A	60				1161.43	A	50					
						1136.67	A	50					
2289.23	A	50				1068.41	A	80					
2284.44	A	150				1059.13	A	60					
2256.64	A	40											
2247.64	A	40				1057.85	A	30					
2218.69	A	40				1055.89	A	40					

Cr IV

I P 49.4? Anal C List C September 1951

REFERENCE

A F. L. Moore, Jr., unpublished material (May 1951). W L, I, T, I P

Cr IV

Cr IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
630.92	A	10	0.12	19.69	4½-5½	a 4F - z 4G°	706.00	A	50	2.55	20.04	2½-2½	a 2D - z 2D°†
632.60	A	30	0.07	19.58	3½-4½	(1)							(8)
634.13	A	20	0.03	19.50	2½-3½								
635.45	A	10	0.00	19.43	1½-2½								
628.97	A	100	0.12	19.74	4½-4½	a 4F - z 4F°†	693.93	A	100	2.63	20.42	5½-4½	a 2H - z 2G°†
629.73	A	50	0.07	19.67	3½-3½	(2)	695.22	A	50	2.60	20.36	4½-3½	(9)
630.28	A	80	0.03	19.62	2½-2½		638.12	A	50	2.63	21.98	5½-4½	a 2H - z 2G°†
630.77	A	20	0.00	19.57	1½-1½		637.54	A	50	2.60	21.96	4½-3½	(10)
627.70	A	10	0.07	19.74	3½-4½								
628.46	A	20	0.03	19.67	2½-3½								
620.65	A	100	0.12	20.01	4½-3½	a 4F - z 4D°†	1840.10	A	100	12.98	19.69	4½-5½	b 4F - z 4G°†
621.33	A	60	0.07	19.94	3½-2½	(3)	1851.82	A	50	12.92	19.58	3½-4½	(11)
622.07	A	40	0.03	19.88	2½-1½		1862.99	A	100	12.87	19.50	2½-3½	
618.22	A	40	0.07	20.04	3½-2½	a 4F - z 2D°	1873.86	A	25	12.84	19.43	1½-2½	
619.12	A	40	0.03	19.97	2½-1½	(4)							
617.05	A	20	0.03	20.04	2½-2½		1826.16	A	30	12.98	19.74	4½-4½	b 4F - z 4F°†
							1827.39	A	10	12.92	19.67	3½-3½	(12)
							1830.29	A	10	12.87	19.62	2½-2½	
							1833.79	A	15	12.84	19.57	1½-1½	
677.54	A	40	1.79	20.01	2½-3½	a 4P - z 4D°	1755.65	A	20	12.98	20.01	4½-3½	b 4F - z 4D°†
678.91	A	20	1.75	19.94	1½-2½	(5)	1758.54	A	20	12.92	19.94	3½-2½	(13)
680.62	A	8	1.74	19.88	0½-1½								
680.15	A	20	1.79	19.94	2½-2½		1739.22	A	50	12.87	19.97	2½-1½	b 4F - z 2D°†
							1731.22	A	20	12.84	19.97	1½-1½	(14)
687.13	A	40	1.90	19.87	4½-3½	a 2G - z 2F°							
688.47	A	50	1.86	19.79	3½-2½	(6)	1990.22	A	40	13.67	19.87	3½-3½	b 2F - z 2F°†
666.5g	A	100	1.90	20.42	4½-4½	a 2G - z 2G°†	1985.58	A	15	13.57	19.79	2½-2½	(15)
667.31	A	75	1.86	20.36	3½-3½	(7)							
							1826.81	A	30	13.67	20.42	3½-4½	b 2F - z 2G°
							1819.18	A	60	13.57	20.36	2½-3½	(16)

MANGANESE, $Z=25$

Mn I

I P 7.40 Anal A List B November 1951

REFERENCE

A M. A. Catalán and Olga García-Riquelme, unpublished material (November 1951). W L, I, T, I P

Mn I

Mn I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2794. 817	A	10R	0. 00	4. 42	$2\frac{1}{2}-3\frac{1}{2}$	$a^4S - y^4P^o$	2782. 711	A	50h	2. 11	6. 54	$4\frac{1}{2}-$	$a^4D - z^4F^o$
2798. 270	A	8R	0. 00	4. 41	$2\frac{1}{2}-2\frac{1}{2}$	(1)	2813. 989	A	12h	2. 15	6. 54	$2\frac{1}{2}-$	(7)
2801. 084	A	6	0. 00	4. 41	$2\frac{1}{2}-1\frac{1}{2}$		2828. 762	A	6h	2. 18	6. 54	$0\frac{1}{2}-$	
2384. 049	A	40R	0. 00	5. 18	$2\frac{1}{2}-3\frac{1}{2}$	$a^4S - z^4D^o$	2771. 430	A	30	2. 11	6. 56	$4\frac{1}{2}-3\frac{1}{2}$	$a^4D - y^4D^o$
2377. 183	A	30R	0. 00	5. 19	$2\frac{1}{2}-2\frac{1}{2}$	(2)	2790. 353	A	30	2. 13	6. 56	$3\frac{1}{2}-2\frac{1}{2}$	(8)
2372. 116	A	10d	0. 00	5. 20	$2\frac{1}{2}-1\frac{1}{2}$		2804. 095	A	20	2. 15	6. 56	$2\frac{1}{2}-1\frac{1}{2}$	
							2813. 481	A	20?	2. 17	6. 56	$1\frac{1}{2}-0\frac{1}{2}$	
							2789. 192	A	25	2. 13	6. 56	$3\frac{1}{2}-3\frac{1}{2}$	
							2818. 919	A	10	2. 18	6. 56	$0\frac{1}{2}-0\frac{1}{2}$	
							2802. 454	A	10?	2. 15	6. 56	$2\frac{1}{2}-3\frac{1}{2}$	
							2812. 840	A	20?	2. 17	6. 56	$1\frac{1}{2}-2\frac{1}{2}$	
							2818. 770	A	20	2. 18	6. 56	$0\frac{1}{2}-1\frac{1}{2}$	
2930. 245	A	20	2. 11	6. 32	$4\frac{1}{2}-5\frac{1}{2}$	$a^4D - x^4F^o \dagger$	2760. 920	A	100hl	2. 11	6. 58	$4\frac{1}{2}-3\frac{1}{2}$	$a^4D - t^4P^o$
2956. 101	A	20	2. 13	6. 31	$3\frac{1}{2}-4\frac{1}{2}$	(3)	2776. 218	A	80hl	2. 13	6. 58	$3\frac{1}{2}-2\frac{1}{2}$	(9)
2978. 566	A	15	2. 15	6. 30	$2\frac{1}{2}-3\frac{1}{2}$		2787. 813	A	15h	2. 15	6. 58	$2\frac{1}{2}-1\frac{1}{2}$	
2996. 470	A	10	2. 17	6. 29	$1\frac{1}{2}-2\frac{1}{2}$		2778. 544	A	60h	2. 13	6. 58	$3\frac{1}{2}-3\frac{1}{2}$	
3008. 822	A	4	2. 18	6. 28	$0\frac{1}{2}-1\frac{1}{2}$		2789. 355	A	15hw	2. 15	6. 58	$2\frac{1}{2}-2\frac{1}{2}$	
2936. 156	A	10	2. 11	6. 31	$4\frac{1}{2}-4\frac{1}{2}$		2796. 938	A	5?	2. 17	6. 58	$1\frac{1}{2}-1\frac{1}{2}$	
2963. 606	A	20	2. 13	6. 30	$3\frac{1}{2}-3\frac{1}{2}$		2791. 707	A	2h	2. 15	6. 58	$2\frac{1}{2}-3\frac{1}{2}$	
2985. 992	A	20	2. 15	6. 29	$2\frac{1}{2}-2\frac{1}{2}$								
3002. 616	A	20	2. 17	6. 28	$1\frac{1}{2}-1\frac{1}{2}$		2940. 331	A	400Hw	2. 31	6. 51	$4\frac{1}{2}-$	$z^4P^o - f^4D$
3012. 854	A	8	2. 18	6. 27	$0\frac{1}{2}-0\frac{1}{2}$		2925. 58	A	500hw	2. 29	6. 51	$3\frac{1}{2}-$	(10)
							2914. 599	A	600Hw	2. 27	6. 51	$2\frac{1}{2}-$	
2941. 681	A	5	2. 17	6. 36	$1\frac{1}{2}-0\frac{1}{2}$	$a^4D - x^4P^o$	2726. 13	A	100Hw	2. 31	6. 84	$4\frac{1}{2}-$	$z^4P^o - g^4D$
2953. 008	A	10	2. 15	6. 33	$2\frac{1}{2}-2\frac{1}{2}$	(4)	2713. 320	A	100Hv	2. 29	6. 84	$3\frac{1}{2}-$	(11)
2950. 979	A	3	2. 17	6. 35	$1\frac{1}{2}-1\frac{1}{2}$		2703. 840	A	40Hv	2. 27	6. 84	$2\frac{1}{2}-$	
2947. 634	A	3	2. 18	6. 36	$0\frac{1}{2}-0\frac{1}{2}$								
2963. 250	A	10	2. 17	6. 33	$1\frac{1}{2}-2\frac{1}{2}$		2584. 302	A	100R	2. 31	7. 08	$4\frac{1}{2}-4\frac{1}{2}$	$z^4P^o - e^4P$
2956. 971	A	10	2. 18	6. 35	$0\frac{1}{2}-1\frac{1}{2}$		2584. 100	A	10	2. 29	7. 06	$3\frac{1}{2}-3\frac{1}{2}$	(12)
							2595. 763	A	80R	2. 31	7. 06	$4\frac{1}{2}-3\frac{1}{2}$	
2839. 997	A	15	2. 11	6. 45	$4\frac{1}{2}-3\frac{1}{2}$	$a^4D - u^4P^o$	2592. 944	A	60R	2. 29	7. 05	$3\frac{1}{2}-2\frac{1}{2}$	
2868. 880	A	7	2. 13	6. 44	$3\frac{1}{2}-2\frac{1}{2}$	(5)	2572. 755	A	50R	2. 29	7. 08	$3\frac{1}{2}-4\frac{1}{2}$	
m2892. 382	P	Mn II	2. 15	6. 42	$2\frac{1}{2}-1\frac{1}{2}$		2575. 509	A	20R	2. 27	7. 06	$2\frac{1}{2}-3\frac{1}{2}$	
2858. 655	A	30	2. 13	6. 45	$3\frac{1}{2}-3\frac{1}{2}$								
2882. 899	A	20	2. 15	6. 44	$2\frac{1}{2}-2\frac{1}{2}$		2779. 993	A	40	2. 88	7. 32	$3\frac{1}{2}-4\frac{1}{2}$	$a^4D - w^4F^o \dagger$
*2902. 203	A	25	2. 17	6. 42	$1\frac{1}{2}-1\frac{1}{2}$		2797. 094	A	5	2. 91	7. 32	$2\frac{1}{2}-3\frac{1}{2}$	(13)
2872. 583	A	30	2. 15	6. 45	$2\frac{1}{2}-3\frac{1}{2}$		2804. 929	A	6	2. 93	7. 33	$1\frac{1}{2}-2\frac{1}{2}$	
2892. 657	A	20	2. 17	6. 44	$1\frac{1}{2}-2\frac{1}{2}$		2808. 385	A	8	2. 94	7. 33	$0\frac{1}{2}-1\frac{1}{2}$	
2907. 993	A	15	2. 18	6. 42	$0\frac{1}{2}-1\frac{1}{2}$								
							2773. 659	A	10	2. 88	7. 33	$3\frac{1}{2}-3\frac{1}{2}$	$a^4D - v^4D^o \dagger$
2799. 841	A	50	2. 11	6. 51	$4\frac{1}{2}-4\frac{1}{2}$	$a^4D - x^4D^o$	2773. 021	A	5	2. 91	7. 36	$2\frac{1}{2}-2\frac{1}{2}$	(14)
2809. 103	A	25	2. 13	6. 53	$3\frac{1}{2}-3\frac{1}{2}$	(6)							
*2821. 452	A	20	2. 15	6. 53	$2\frac{1}{2}-2\frac{1}{2}$		2655. 787	A	15	2. 88	7. 52	$3\frac{1}{2}-4\frac{1}{2}$	$a^4D - y^4G^o \dagger$
*2830. 793	A	20	2. 17	6. 53	$1\frac{1}{2}-1\frac{1}{2}$		2676. 326	A	10	2. 91	7. 52	$2\frac{1}{2}-3\frac{1}{2}$	(15)
2791. 085	A	20	2. 11	6. 53	$4\frac{1}{2}-3\frac{1}{2}$								
2808. 015	A	20	2. 13	6. 53	$3\frac{1}{2}-2\frac{1}{2}$								
*2821. 452	A	20	2. 15	6. 53	$2\frac{1}{2}-1\frac{1}{2}$								
2817. 969	A	30	2. 13	6. 51	$3\frac{1}{2}-4\frac{1}{2}$								
2822. 549	A	30	2. 15	6. 53	$2\frac{1}{2}-3\frac{1}{2}$								
*2830. 793	A	20	2. 17	6. 53	$1\frac{1}{2}-2\frac{1}{2}$								
2836. 310	A	20	2. 18	6. 53	$0\frac{1}{2}-1\frac{1}{2}$								

Mn II

I P 15.57 Anal A List B September 1951

REFERENCE

A C. W. Curtis, Phys. Rev. **53**, 474 (1938) and J. Opt. Soc. Am., **42**, 300 (1952). W L, I, T, I P

Mn II

Mn II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2576. 107†	A	400	0. 00	4. 79	3-4	$a^1S - z^1P^o$	1853. 271	A	25	1. 77	8. 43		$a^1D - y^1P^o†$
2593. 731	A	300	0. 00	4. 76	3-3	(1)	1857. 918	A	20	1. 80	8. 45		(12)
2605. 697	A	1000	0. 00	4. 74	3-2		1861. 663	A	10	1. 82	8. 46		
							1862. 517	A	10	1. 80	8. 43		
2305. 001	A	8	0. 00	5. 35	3-3	$a^1S - z^1P^o$	1864. 403	A	10	1. 82	8. 45		
2298. 954	A	3	0. 00	5. 37	3-2	(2)	1865. 831	A	10	1. 84	8. 46	1-1	
Vac							1733. 557	A	15	1. 77	8. 89	4-4	$a^1D - y^1D^o†$
1197. 172	A	40	0. 00	10. 31	3-4	$a^1S - y^1P^o$	1734. 491	A	12	1. 80	8. 92	3-3	(13)
1199. 388	A	25	0. 00	10. 29	3-3	(3)	1738. 349	A	4	1. 82	8. 93	2-2	
1201. 124	A	20	0. 00	10. 28	3-2								
							1377. 938	A	15	1. 77	10. 73	4-3	$a^1D - w^1P^o†$
1162. 017	A	50	0. 00	10. 62	3-4	$a^1S - x^1P^o$	1382. 298	A	10	1. 80	10. 73	3-2	(14)
1163. 325	A	40	0. 00	10. 61	3-3	(4)	1383. 055	A	4	1. 80	10. 73	3-3	
1164. 211	A	30	0. 00	10. 60	3-2		1385. 892	A	10	1. 82	10. 73	2-2	
Air							1188. 502	A	50	1. 77	12. 16	4-5	$a^1D - x^1F^o$
2949. 201	A	1000	1. 17	5. 35	2-3	$a^1S - z^1P^o$	1192. 313	A	40	1. 80	12. 16	3-4	(15)
2939. 302	A	800	1. 17	5. 37	2-2	(5)	1194. 998	A	30	1. 82	12. 16	2-3	
2933. 051	A	500	1. 17	5. 38	2-1		1196. 724	A	25	1. 84	12. 16	1-2	
							1197. 570	A	10	1. 85	12. 16	0-1	
Vac							1062. 507	A	30	1. 77	13. 39	4-5	$a^1D - y^1F^o$
1291. 584	A	10	1. 17	10. 73	2-3	$a^1S - w^1P^o$	1065. 564	A	25	1. 80	13. 39	3-4	(16)
1290. 926	A	10	1. 17	10. 73	2-2	(6)	1067. 729	A	23	1. 82	13. 39	2-3	
1290. 525	A	8	1. 17	10. 74	2-1		1069. 110	A	20	1. 84	13. 39	1-2	
							1069. 775	A	10	1. 85	13. 39	0-1	
1023. 546	A	20	1. 17	13. 23	2-3	$a^1S - u^1P^o$							
1027. 995	A	18	1. 17	13. 18	2-2	(7)	1003. 012	A	22	1. 77	14. 08	4-5	$a^1D - r^1F^o$
1030. 866	A	10	1. 17	13. 14	2-1		1005. 714	A	22	1. 80	14. 08	3-4	(17)
							1007. 622	A	15	1. 82	14. 08	2-3	
1000. 956	A	25	1. 17	13. 50	2-3	$a^1S - t^1P^o$	1008. 859	A	12	1. 84	14. 08	1-2	
1005. 019	A	20	1. 17	13. 45	2-2	(8)	1009. 463	A	10	1. 85	14. 08	0-1	
1007. 530	A	15	1. 17	13. 42	2-1								
							Air						
982. 901	A	25	1. 17	13. 73	2-3	$a^1S - s^1P^o$	2701. 693	A	250	3. 40	7. 97	6-6	$a^1G - z^1G^o†$
983. 240	A	20	1. 17	13. 73	2-2	(9)	2705. 727	A	150	3. 40	7. 96	5-5	(18)
983. 403	A	15	1. 17	13. 72	2-1		2708. 445	A	100	3. 41	7. 96	4-4	
							2710. 332	A	100	3. 41	7. 96	3-3	
1915. 095	A	30	1. 77	8. 21	4-5	$a^1D - z^1F^o†$	2711. 632	A	80	3. 41	7. 96	2-2	
1921. 245	A	25	1. 80	8. 23	3-4	(10)	2703. 977	A	40	3. 40	7. 96	6-5	
1926. 579	A	15	1. 82	8. 23	2-3		2707. 542	A	40	3. 40	7. 96	5-4	
1931. 408	A	10	1. 84	8. 23	1-2		2709. 969	A	30	3. 41	7. 96	4-3	
1911. 395	A	12	1. 77	8. 23	4-4		2711. 566	A	100	3. 41	7. 96	3-2	
1919. 639	A	7	1. 80	8. 23	3-3								
1926. 938	A	9	1. 82	8. 23	2-2		2610. 202	A	200	3. 40	8. 13	6-7	$a^1G - z^1H^o$
							2618. 142	A	200	3. 40	8. 12	5-6	(19)
1907. 838	A	8	1. 80	8. 27	3-3	$a^1D - z^1D^o†$	2625. 606	A	200u	3. 41	8. 11	4-5	
1918. 638	A	6	1. 82	8. 26	2-2	(11)	2632. 353	A	200	3. 41	8. 09	3-4	
1923. 341	A	10	1. 84	8. 26	1-1		2638. 173	A	200	3. 41	8. 08	2-3	
1914. 676	A	12	1. 82	8. 27	2-3		2616. 506	A	30	3. 40	8. 12	6-6	
1923. 059	A	10	1. 84	8. 26	1-2		2624. 760	A	10	3. 40	8. 11	5-5	
1925. 556	A	10	1. 85	8. 26	0-1		2632. 011	A	15	3. 41	8. 09	4-4	
							2638. 127	A	(3)	3. 41	8. 08	3-3	

Mn II—Continued

Mn II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2563.640	A	200	3.40	8.21	6-5	$a^3G - z^3F^\circ \uparrow$ (20)	1111.898	A	10	3.40	14.50	6-5	$a^3G - p^3F^\circ \uparrow$ (31)
2558.604	A	200u	3.40	8.23	5-4		1113.232	A	9	3.40	14.49	5-4	
2556.572	A	100u	3.41	8.23	4-3		1114.437	A	8	3.41	14.48	4-3	
2557.540	A	60u	3.41	8.23	3-2		Air						
2559.677	A	10u	3.41	8.23	2-1		2551.849	A	40	3.69	8.52	2-2	$a^3P - z^3P^\circ \uparrow$ (32)
2565.219	A	100	3.40	8.21	5-5	2540.752	A	9u	3.69	8.54	2-1		
2559.415	A	30	3.41	8.23	4-4	2606.116	A	8	3.79	8.52	1-2		
2556.803	A	40u	3.41	8.23	3-3	$a^3G - z^3D^\circ \uparrow$ (21)	*2722.095	A	60	3.70	8.23	1-2	$a^3P - z^3F^\circ \uparrow$ (33)
2557.596	A	(5)	3.41	8.23	2-2		2716.795	A	40	3.69	8.23	3-3	
2566.034	A	8u	3.41	8.21	4-5		2719.736	A	30	3.69	8.23	2-2	
2559.745	A	10u	3.41	8.23	3-4		2724.462	A	50	3.70	8.23	1-1	
2516.597	A	8	3.40	8.31	5-4		2717.525	A	30	3.69	8.23	3-2	$a^3P - z^3D^\circ \uparrow$ (34)
2535.657	A	15	3.41	8.27	4-3	*2722.095	A	60	3.69	8.23	2-1		
2542.922	A	30u	3.41	8.26	3-2	$a^3G - z^3S^\circ \uparrow$ (22)	2672.581	A	200	3.69	8.31	3-4	
2543.458	A	30u	3.41	8.26	2-1		2695.363	A	30	3.69	8.27	2-3	
2541.113	A	30u	3.41	8.26	3-2		2705.557	A	10?	3.70	8.26	1-2	
Vac							2693.191	A	40	3.69	8.27	3-3	
*1236.148	A	25	3.40	13.39	6-5		$a^3G - v^3F^\circ$ (23)	2701.035	A	20	3.69	8.26	3-2
1236.545	A	15	3.40	13.39	5-4	2698.984		A	25	3.69	8.26	3-2	
1236.770	A	20	3.41	13.39	4-3	$a^3G - y^3G^\circ \uparrow$ (24)	2701.168	A	40	3.69	8.26	2-2	
*1236.878	A	20	3.41	13.39	3-2		2603.721	A	20	3.69	8.43	3-3	
			3.41	13.39	2-1		2594.734	A	15	3.69	8.45	3-2	
1233.952	A	30	3.40	13.41	6-6		2591.432	A	10	3.69	8.46	2-1	
1234.872	A	25	3.40	13.40	5-5		*2598.899	A	20	3.70	8.45	1-2	
1235.463	A	25	3.41	13.40	4-4	$a^3G - u^3F^\circ \uparrow$ (25)	2408.853	A	15u	3.69	8.81	3-3	
1235.869	A	25	3.41	13.39	3-3		2412.735	A	10u	3.69	8.80	3-2	
*1236.148	A	25	3.41	13.39	2-2		2417.939	A	10u	3.69	8.80	2-1	
1234.507	A	8	3.40	13.40	6-5		2410.584	A	25u	3.69	8.81	2-3	
1235.273	A	10	3.40	13.40	5-4		2416.344	A	25u	3.70	8.80	1-2	
1235.793	A	10	3.41	13.39	4-3	$a^3G - y^3H^\circ \uparrow$ (26)	2373.358	A	50u	3.69	8.89	3-4	
1222.785	A	30	3.40	13.50	6-5		2360.096	A	10	3.69	8.92	3-3	
1224.733	A	28	3.40	13.48	5-4		2358.447	A	15	3.69	8.93	2-2	
1226.397	A	25d?	3.41	13.47	4-3		2359.456	A	8	3.70	8.93	1-1	
1227.638	A	23	3.41	13.46	3-2		Vac						
1228.423	A	20	3.41	13.46	2-1	1679.564	A	15	3.69	11.04	3-3		
1199.341	A	40	3.40	13.69	6-7	$a^3G - t^3F^\circ$ (27)	1689.488	A	15	3.69	11.00	3-2	
1201.570	A	40	3.40	13.68	5-6		1680.400	A	10	3.69	11.04	2-3	
1203.252	A	30	3.41	13.66	4-5		1691.246	A	8	3.70	11.00	1-2	
1204.619	A	25	3.41	13.65	3-4		1258.028	A	15	3.69	13.50	3-3	
1205.423	A	20	3.41	13.65	2-3		1264.447	A	12	3.69	13.45	3-2	
1195.973	A	30	3.40	13.72	6-5	$a^3G - x^3G^\circ \uparrow$ (28)	1268.905	A	10	3.69	13.42	2-1	
*1196.333	A	25	3.40	13.72	5-4		1258.514	A	15	3.69	13.50	2-3	
1197.14	P	Mn II	3.41	13.72	4-3		1265.387	A	10d?	3.70	13.45	1-2	
1197.996	A	10	3.41	13.71	3-2		1254.410	A	15	3.69	13.53	3-4	
1198.630	A	10	3.41	13.71	2-1		1256.957	A	10	3.69	13.51	2-3	
*1196.333	A	25	3.40	13.72	5-5	$a^3G - x^3S^\circ \uparrow$ (29)	1259.561	A	8	3.70	13.50	1-2	
1196.517	A	20	3.41	13.72	4-4		1256.468	A	8	3.69	13.51	3-3	
1165.823	A	25	3.40	13.99	6-6		1259.046	A	12	3.69	13.50	2-2	
1167.130	A	20	3.40	13.98	5-5		1261.282	A	8	3.70	13.49	1-1	
1168.254	A	15	3.41	13.97	4-4		1241.626	A	10	3.69	13.63	3-4	
1169.280	A	15	3.41	13.96	3-3	$a^3G - s^3F^\circ \uparrow$ (30)	1245.551	A	15	3.69	13.60	2-3	
1169.531	A	15	3.41	13.96	2-2		1247.659	A	15	3.69	13.59	2-2	
1166.157	A	10	3.40	13.99	5-6		1229.653	A	25	3.69	13.73	3-3	
1161.295	A	20	3.40	14.03	6-5		1230.152	A	15	3.69	13.73	3-2	
1161.764	A	20	3.40	14.03	5-4		1230.873	A	10	3.69	13.72	2-1	
1156.345	A	30	3.40	14.08	6-5	$a^3G - r^3F^\circ$ (31)	1230.106	A	20	3.69	13.73	2-3	
1156.658	A	25	3.40	14.08	5-4		1231.101	A	8	3.70	13.73	1-2	
1156.834	A	20	3.41	14.08	4-3								
			3.41	14.08	3-2								
*1156.900	A	20	3.41	14.08	2-1								

Mn II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2685.882	A	30	3.77	8.36	6-6	$a^1H - z^1H^{\circ}\uparrow$
2689.787	A	20	3.79	8.38	5-5	(44)
2693.564	A	15	3.80	8.38	4-4	
2499.003	A	40u	3.77	8.71	6-5	$a^1H - z^1G^{\circ}\uparrow$
2507.598	A	50u	3.79	8.71	5-4	(45)
2516.741	A	20	3.80	8.71	4-3	
2751.123	A	30	3.89	8.38	4-4	$a^1F - z^1F^{\circ}\uparrow$
2765.431	A	13	3.91	8.37	3-3	(46)
2776.525	A	10u	3.92	8.37	2-2	
2548.255	A	8u	3.89	8.73	4-3	$a^1F - z^1D^{\circ}\uparrow$
2545.160	A	30u	3.91	8.76	3-2	(47)
2542.651	A	8u	3.92	8.77	2-1	
2387.004	A	15u	3.89	9.06	4-3	$a^1F - y^1D^{\circ}\uparrow$
2395.387	A	10u	3.91	9.06	3-2	(48)
2401.717	A	10u	3.92	9.06	2-1	
2961.688	A	20	4.05	8.21	4-5	$b^1D - z^1F^{\circ}\uparrow$
*2958.939	A	20	4.06	8.23	3-4	(49)
2952.873	A	10	4.05	8.23	4-4	
2955.126	A	10	4.06	8.23	3-3	
2956.166	A	10	4.06	8.23	2-2	
2956.978	A	15	4.05	8.23	1-1	
2956.006	A	10	4.06	8.23	3-2	
*2958.939	A	20	4.06	8.23	2-1	
2897.066	A	40	4.05	8.31	4-4	$b^1D - z^1D^{\circ}\uparrow$
2927.231	A	15	4.06	8.27	3-3	(50)
2902.899	A	25	4.06	8.31	3-4	
2927.394	A	20	4.06	8.27	2-3	
2934.724	A	10	4.05	8.26	1-2	
2816.327	A	20	4.05	8.43	4-3	$b^1D - y^1P^{\circ}\uparrow$
2811.283	A	15	4.06	8.45	3-2	(51)
2805.207	A	15	4.06	8.46	2-1	
2811.434	A	10	4.06	8.45	2-2	
2803.443	A	10	4.05	8.46	1-1	
2639.850	A	20	4.05	8.72	4-5	$b^1D - y^1F^{\circ}\uparrow$
2655.920	A	100	4.06	8.70	3-4	(52)
*2667.033	A	25	4.06	8.68	2-3	
2673.381	A	50	4.05	8.67	1-2	
2677.851	A	30	4.05	8.66	0-1	
2651.039	A	(2)	4.05	8.70	4-4	
2666.893	A	10	4.06	8.68	3-3	
2674.987	A	15	4.06	8.67	2-2	
2679.165	A	30	4.05	8.66	1-1	
2648.941	A	20	4.05	8.71	4-5	$b^1D - z^1G^{\circ}\uparrow$
2652.496	A	160	4.06	8.71	3-4	(53)
2647.626	A	10u	4.05	8.71	4-4	
2589.726	A	25	4.05	8.81	4-3	$b^1D - z^1P^{\circ}\uparrow$
*2598.899	A	20	4.06	8.80	3-2	(54)
2603.036	A	15	4.06	8.80	2-1	
2594.400	A	10	4.06	8.81	3-3	
2599.036	A	10	4.06	8.80	2-2	
2601.521	A	20	4.05	8.80	1-1	
2600.283	A	8	4.05	8.80	0-1	

Mn II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2548.749	A	50u	4.05	8.89	4-4	$b^1D - y^1D^{\circ}\uparrow$
2537.921	A	40	4.06	8.92	3-3	(55)
2534.219	A	20	4.06	8.93	2-2	
2534.097	A	10	4.06	8.93	3-2	
2533.329	A	10	4.06	8.93	2-1	
2531.795	A	15	4.05	8.93	1-0	
2553.266	A	50	4.06	8.89	3-4	
2538.044	A	20	4.06	8.92	2-3	
2532.779	A	20	4.05	8.93	1-2	
2530.719	A	30	4.05	8.93	0-1	
Vac						
1305.628	A	15	4.05	13.50	4-3	$b^1D - t^1P^{\circ}\uparrow$
*1313.766	A	10	4.06	13.45	3-2	(56)
1306.814	A	10	4.06	13.50	3-3	
*1313.766	A	10	4.06	13.45	2-2	
1287.978	A	15	4.05	13.63	4-4	$b^1D - w^1D^{\circ}\uparrow$
*1292.866	A	15	4.06	13.60	3-3	(57)
*1295.150	A	10	4.06	13.59	2-2	
1291.702	A	10	4.05	13.60	4-3	
*1295.150	A	10	4.06	13.59	3-2	
1289.132	A	15	4.06	13.63	3-4	
*1292.866	A	15	4.06	13.60	2-3	
1294.803	A	10	4.05	13.59	1-2	
*1275.973	A	40	4.05	13.72	4-5	$b^1D - t^1F^{\circ}\uparrow$
*1277.120	A	20d?	4.06	13.72	3-4	(58)
*1277.817	A	20	4.06	13.72	2-3	
*1275.973	A	40	4.05	13.72	4-4	
*1277.817	A	20	4.06	13.72	3-3	
1278.749	A	15	4.06	13.71	2-2	
1279.089	A	10	4.05	13.71	1-1	
1275.102	A	20	4.05	13.73	4-3	$b^1D - s^1P^{\circ}\uparrow$
*1276.772	A	10d?	4.06	13.73	3-2	(59)
*1277.120	A	20d?	4.06	13.72	2-1	
*1276.238	A	20	4.06	13.73	3-3	
*1276.772	A	10d?	4.06	13.73	2-2	
*1276.238	A	20	4.06	13.73	2-3	
Air						
2889.605	A	120	4.09	8.36	5-6	$a^1G - z^1H^{\circ}\uparrow$
2889.528	A	100	4.10	8.38	4-5	(60)
2886.670	A	100	4.11	8.38	3-4	
2879.485	A	100u	4.09	8.38	5-4	$a^1G - z^1F^{\circ}$
2892.385	A	60	4.10	8.37	4-3	(61)
2898.703	A	60	4.11	8.37	3-2	
2887.882	A	10	4.10	8.38	4-4	
2894.905	A	10	4.11	8.37	3-3	
2665.178	A	15u	4.09	8.72	5-5	$a^1G - y^1F^{\circ}\uparrow$
2683.835	A	15	4.10	8.70	4-4	(62)
2685.987	A	10	4.11	8.70	3-4	
2674.442	A	50	4.09	8.71	5-5	$a^1G - z^1G^{\circ}\uparrow$
2680.336	A	40u	4.10	8.71	4-4	(63)
2684.539	A	50	4.11	8.71	3-3	
2466.216	A	20	4.09	9.10	5-4	$a^1G - y^1F^{\circ}\uparrow$
2466.417	A	10	4.10	9.11	4-3	(64)
2467.979	A	10	4.11	9.11	3-2	

Mn II—Continued

Mn II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1417.949	A	10	5.35	14.06	3-2	$z^4P^o - h^4S^{\dagger}$	2707.917	A	20	7.97	12.53	6-6	$z^4G^o - e^4G^{\dagger}$
1420.239	A	8	5.37	14.06	2-2	(93)	2704.046	A	15	7.96	12.53	5-5	(103)
							2701.530	A	12	7.96	12.53	4-4	
1953.234	A	40	6.88	13.20	4-5	$c^4D - w^4F^o^{\dagger}$	2699.852	A	10	7.96	12.53	3-3	
1947.945	A	40	6.84	13.17	3-4	(94)	2698.732	A	10	7.96	12.53	2-2	
1945.150	A	25	6.80	13.15	2-3								
1944.168	A	15	6.78	13.13	1-2		2806.510	A	25	8.13	12.53	7-6	$z^4H^o - e^4G^{\dagger}$
1944.794	A	12	6.77	13.12	0-1		2797.576	A	25	8.12	12.53	6-5	(104)
1960.358	A	11	6.88	13.17	4-4		2789.304	A	12	8.11	12.53	5-4	
1954.855	A	12	6.84	13.15	3-3		2781.936	A	20	8.09	12.53	4-3	
1950.919	A	15	6.80	13.13	2-2								
1948.277	A	10	6.78	13.12	1-1		2458.582	A	12	8.13	13.15	7-8	$z^4H^o - e^4I^{\dagger}$
							2452.326	A	10	8.12	13.15	6-7	(105)
1942.646	A	20	6.88	13.23	4-3	$c^4D - u^4P^o^{\dagger}$	2446.393	A	10	8.11	13.15	5-6	
1946.335	A	9	6.84	13.18	3-2	(95)							
1930.437	A	8	6.84	13.23	3-3								
1936.717	A	10	6.80	13.18	2-2								
1862.816	A	20	6.88	13.50	4-3	$c^4D - t^4P^o^{\dagger}$	2862.404	A	20	8.21	12.53	5-6	$z^4F^o - e^4G^{\dagger}$
1865.547	A	12	6.84	13.45	3-2	(96)	2868.891	A	20	8.23	12.53	4-5	(106)
1865.296	A	8	6.80	13.42	2-1		2871.675	A	10	8.23	12.53	3-4	
*1851.597	A	15	6.84	13.50	3-3		2870.665	A	10	8.23	12.53	2-3	
1856.700	A	12	6.80	13.45	2-2		2860.629	A	10	8.21	12.53	5-5	
1859.119	A	10	6.78	13.42	1-1		2868.097	A	10	8.23	12.53	4-4	
1864.617	A	15	6.88	13.50	4-5	$c^4D - u^4F^o^{\dagger}$							
1857.018	A	10	6.84	13.48	3-4	(97)							
*1851.597	A	15	6.80	13.47	2-3		2898.532	A	15	8.27	12.53	3-4	$z^4D^o - e^4G^{\dagger}$
1848.160	A	10	6.78	13.46	1-2		2889.312	A	10	8.26	12.53	2-3	(107)
							2888.811	A	15	8.26	12.53	1-2	
1854.903	A	20	6.88	13.53	4-4	$c^4D - x^4D^o^{\dagger}$							
1848.266	A	20	6.84	13.51	3-3	(98)							
1844.080	A	6	6.80	13.50	2-2								
1859.444	A	8	6.88	13.51	4-3		2861.536	A	20	8.36	12.68	6-5	$z^4H^o - e^4G^{\dagger}$
1852.810	A	10	6.84	13.50	3-2		2867.984	A	15	8.38	12.68	5-4	(108)
1847.780	A	10	6.80	13.49	2-1		2873.125	A	25	8.38	12.68	4-3	
1827.079	A	50	6.88	13.63	4-4	$c^4D - w^4D^o^{\dagger}$							
1823.697	A	30	6.84	13.60	3-3	(99)							
1819.750	A	9	6.80	13.59	2-2		2871.532	A	10	8.38	12.68	4-5	$z^4F^o - e^4G^{\dagger}$
*1816.287	A	20	6.78	13.58	1-1		2865.182	A	15	8.37	12.68	3-4	(109)
1834.573	A	25	6.88	13.60	4-3		2861.300	A	15	8.37	12.68	2-3	
1828.250	A	20	6.84	13.59	3-2								
1822.212	A	10	6.80	13.58	2-1								
*1816.287	A	20	6.84	13.63	3-4		2814.561	A	10	8.43	12.81	3-3	$y^4P^o - e^4P$
1815.242	A	20	6.80	13.60	2-3		2822.544	A	15	8.45	12.82	2-2	(110)
1813.865	A	15	6.78	13.59	1-2		2826.281	A	10	8.46	12.82	1-1	
1813.287	A	10	6.77	13.58	0-1		2811.970	A	10	8.43	12.82	3-2	
							2819.980	A	10	8.45	12.82	2-1	
1801.272	A	50	6.88	13.73	4-3	$c^4D - s^4P^o^{\dagger}$	2825.139	A	10	8.45	12.81	2-3	
1791.884	A	25	6.84	13.73	3-2	(100)	2828.831	A	12	8.46	12.82	1-2	
1784.245	A	15	6.80	13.72	2-1								
1790.788	A	20	6.84	13.73	3-3		2913.716	A	20	8.73	12.97	3-2	$z^4D^o - e^4P^{\dagger}$
1783.718	A	20	6.80	13.73	2-2		2933.379	A	8	8.76	12.96	2-1	(111)
1778.595	A	20	6.78	13.72	1-1								
1725.295	A	15	6.88	14.03	4-5	$c^4D - s^4F^o^{\dagger}$							
1715.982	A	12	6.84	14.03	3-4	(101)							
*1714.390	A	20	6.88	14.08	4-	$c^4D - r^4F^o$	2917.071	A	25	9.82	14.05	5-	$e^4D - x^4F^o$
*1704.862	A	15	6.84	14.08	3-	(102)	2916.150	A	25	9.82	14.05	4-	(112)
*1697.526	A	12	6.80	14.08	2-		2915.454	A	25	9.82	14.05	3-	
*1692.457	A	10	6.78	14.08	1-		2914.952	A	25	9.82	14.05	2-	

Mn III

I P 33.54 Anal C List B October 1951

REFERENCE

A M. A. Catalán and O. García-Riquelme, unpublished material (October 1951). W L, I, T, I P

Mn III

Mn III

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Vac							Air						
892.380	A	20	0.00	13.83	2½-3½	a 'S - z 'P°	2068.965	A	1000	7.81	13.78	4½-5½	a 'D - z 'F°
893.768	A	10	0.00	13.81	2½-2½	(1)	2077.310	A	900	7.78	13.72	3½-4½	(10)
894.627	A	8	0.00	13.80	2½-1½		2084.159	A	800	7.75	13.67	2½-3½	
							2089.992	A	600	7.72	13.63	1½-2½	
							2095.012	A	200	7.71	13.60	0½-1½	
							2090.169	A	300	7.81	13.72	4½-4½	
1108.157	A	20	3.31	14.45	5½-4½	a 'G - z 'F°†	2094.712	A	500	7.78	13.67	3½-3½	
1111.104	A	10	3.31	14.43	4½-3½	(2)	2097.870	A	500	7.75	13.63	2½-2½	
1113.174	A	5	3.32	14.41	3½-2½		2099.908	A	500	7.72	13.60	1½-1½	
							2101.038	A	200	7.71	13.58	0½-0½	
							2107.811	A	5	7.81	13.67	4½-3½	
							2108.558	A	15	7.78	13.63	3½-2½	
1206.425	A	20	3.60	13.83	2½-3½	a 'P - z 'P°	2107.853	A	15	7.75	13.60	2½-1½	
						(3)	2105.982	A	10+1	7.72	13.58	1½-0½	
1183.305	A	30	3.60	14.03	2½-2½	a 'P - z 'P°	2049.597	A	500	7.81	13.83	4½-3½	a 'D - z 'P°
1192.777	A	8	3.61	13.96	1½-1½	(4)	2044.486	A	300	7.78	13.81	3½-2½	(11)
1191.726	A	15	3.60	13.96	2½-1½		2038.874	A	100	7.75	13.80	2½-1½	
							2037.214	A	150+1	7.78	13.83	3½-3½	
							2034.424	A	100+1	7.75	13.81	2½-2½	
							2031.439	A	100	7.72	13.80	1½-1½	
1228.971	A	100	3.99	14.03	3½-2½	a 'D - z 'P°	2027.231	A	4	7.75	13.83	2½-3½	
1239.244	A	50w	4.00	13.96	2½-1½	(5)	2027.016	A	5	7.72	13.81	1½-2½	
1230.120	A	20w	4.00	14.03	2½-2½		2026.861	A	20	7.71	13.80	0½-1½	
1219.792	A	30	3.99	14.11	3½-2½	a 'D - z 'D°	Vac						
1223.825	A	20w	4.00	14.09	2½-1½	(6)	1972.796	A	100	7.78	14.03	3½-2½	a 'D - z 'P°
							1986.770	A	100	7.75	13.96	2½-1½	(12)
							1990.158	A	3	7.72	13.93	1½-0½	
1179.846	A	20	3.99	14.45	3½-4½	a 'D - z 'F°	1963.431	A	100	7.75	14.03	2½-2½	
1183.870	A	25w	4.00	14.43	2½-3½	(7)	1979.709	A	1	7.72	13.96	1½-1½	
1186.133	A	10w	4.00	14.41	2½-2½		1985.717	A	300	7.71	13.93	0½-0½	
							1956.552	A	300	7.72	14.03	1½-2½	
							1975.375	A	100	7.71	13.96	0½-1½	
1360.704	A	1000	5.38	14.45	4½-4½	a 'F - z 'F°†	1952.430	A	1000	7.81	14.14	4½-4½	a 'D - z 'D°
1365.206	A	800	5.38	14.43	3½-3½	(8)	1952.285	A	500	7.78	14.10	3½-3½	(13)
1369.419	A	400	5.39	14.41	2½-2½		1940.142	A	6+1	7.75	14.11	2½-2½	
1371.649	A	300	5.39	14.39	1½-1½		1940.380	A	15	7.71	14.07	0½-0½	
1364.645	A	5	5.38	14.43	4½-3½		1963.638	A	200	7.81	14.10	4½-3½	
1368.188	A	20	5.38	14.41	3½-2½		1949.276	A	200	7.78	14.11	3½-2½	
1371.567	A	5	5.39	14.39	2½-1½		1947.439	A	200	7.75	14.09	2½-1½	
							1944.557	A	150	7.72	14.07	1½-0½	
1283.566	A	500	5.38	15.00	4½-3½	a 'F - z 'D°	1941.227	A	500	7.78	14.14	3½-4½	
1287.583	A	400	5.38	14.97	3½-2½	(9)	1943.133	A	800	7.75	14.10	2½-3½	
1291.597	A	300	5.39	14.95	2½-1½		1933.426	A	100	7.72	14.11	1½-2½	
1293.649	A	200	5.39	14.93	1½-0½		1936.483	A	200	7.71	14.09	0½-1½	
1284.041	A	30	5.38	15.00	3½-3½								
1288.674	A	50	5.39	14.97	2½-2½								
1291.681	A	407	5.39	14.95	1½-1½								

Mn III—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	
			Low	High			
Air							
2409. 290	A	200	8. 91	14. 03	3½-2½	b 'D - z 'P°† (14)	
2423. 697	A	100	8. 87	13. 96	2½-1½		
2423. 490	A	20	8. 83	13. 93	1½-0½		
2389. 023	A	300	8. 87	14. 03	2½-2½		
2408. 056	A	80	8. 83	13. 96	1½-1½		
2373. 840	A	20	8. 83	14. 03	1½-2½	b 'D - z 'D°† (15)	
2354. 659	A	50	8. 87	14. 11	2½-2½		
2350. 507	A	80	8. 83	14. 09	1½-1½		
2346. 899	A	10	8. 81	14. 07	0½-0½		
2374. 312	A	200	8. 91	14. 11	3½-2½		
2365. 401	A	90	8. 87	14. 09	2½-1½	b 'D - z 'F° (16)	
2227. 491	A	1000	8. 91	14. 45	3½-4½		
2220. 538	A	900	8. 87	14. 43	2½-3½		
2215. 211	A	800	8. 83	14. 41	1½-2½		
2212. 418	A	600	8. 81	14. 39	0½-1½		
2238. 061	A	20	8. 91	14. 43	3½-3½	b 'D - z 'D° (17)	
2228. 466	A	20	8. 87	14. 41	2½-2½		
2220. 737	A	20?	8. 83	14. 39	1½-1½		
2027. 773	A	1000w	8. 91	15. 00	3½-3½		
2022. 125	A	300	8. 87	14. 97	2½-2½		
2018. 373	A	80	8. 83	14. 95	1½-1½	z 'F° - z 'G (18)	
2016. 261	A	30	8. 81	14. 93	0½-0½		
2036. 585	A	30	8. 91	14. 97	3½-2½		
2029. 339	A	80	8. 87	14. 95	2½-1½		
2023. 154	A	50	8. 83	14. 93	1½-0½		
2013. 442	A	100	8. 87	15. 00	2½-3½		
2011. 213	A	50	8. 83	14. 97	1½-2½		
2011. 515	A	20	8. 81	14. 95	0½-1½		
Vac							
1620. 624	A	2000	13. 78	21. 39	5½-6½		
1614. 170	A	1000	13. 72	21. 36	4½-5½		
1609. 187	A	500u	13. 67	21. 34	3½-4½		
1605. 545	A	40u?	13. 63	21. 32	2½-3½		
1603. 231	A	30u?	13. 60	21. 30	1½-2½?		
1602. 364	A	20	13. 58	21. 29	0½-1½?		
1627. 029	A	6u?	13. 78	21. 36	5½-5½		
1619. 599	A	40u?	13. 72	21. 34	4½-4½		
1613. 667	A	20	13. 67	21. 32	3½-3½		
1609. 008	A	20u	13. 63	21. 30	2½-2½?		
1617. 172	A	5	13. 67	21. 30	3½-2½		

Mn III—Continued

I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High		
Vac						
1577. 953	A	100	13. 78	21. 60	5½—5½	z °F°—e °F (19)
1568. 311	A	10	13. 72	21. 59	4½—4½	
*1565. 838	A	30u, 17	13. 67	21. 55	3½—3½?	
1558. 188	A	51?	13. 72	21. 60	4½—5½	z °F°—f °D† (20)
			13. 63	21. 55	2½—3½	
1530. 365	A	20p?u	13. 78	21. 84	5½—4½	z °F°—f °D† (20)
1526. 045	A	10u	13. 72	21. 81	4½—3½	
1522. 570	A	8u	13. 67	21. 78	3½—2½	
1519. 633	A	5u	13. 63	21. 75	2½—1½	
1516. 877	A	20	13. 60	21. 74	1½—0½	

1647. 492	A	250u?	13. 83	21. 33	3½—3½	z °P°—e °P (21)
1646. 604	A	2u?	13. 81	21. 31	2½—2½	
1644. 940	A	10u?	13. 80	21. 30	1½—1½?	
1651. 357	A	80u?	13. 83	21. 31	3½—2½	
1647. 823	A	80u?	13. 81	21. 30	2½—1½	
1642. 761	A	30	13. 81	21. 33	2½—3½	
1643. 709	A	30u?	13. 80	21. 31	1½—2½	z °P°—e °S (22)
1430. 790	A	20u	13. 83	22. 46	3½—2½	
1427. 232	A	6u	13. 81	22. 46	2½—2½	
1425. 043	A	3u	13. 80	22. 46	1½—2½	

1673. 448	A	200p?	13. 93	21. 30	0½—1½?	z °P°—e °P (23)
1680. 875	A	8u?	13. 96	21. 30	1½—1½?	

1669. 010	A	200	14. 14	21. 53	4½—4½	z °D°—e °D (24)
1667. 647	A	20u?	14. 10	21. 50	3½—3½	
1653. 570	A	400u	14. 14	21. 60	4½—5½?	z °D°—e °F† (25)
1648. 408	A	100u?	14. 10	21. 59	3½—4½	
1658. 671	A	6u	14. 11	21. 55	2½—3½?	

Strongest Unclassified Lines of Mn III

Air			Vac		
2211. 942	A	400	1989. 518	A	400
2185. 103	A	600	1982. 690	A	400
2184. 849	A	800 ^w	1978. 879	A	500 ⁱ
2181. 847	A	800	1877. 555	A	400
2176. 859	A	900	1804. 028	A	400
2174. 132	A	700	1633. 807	A	500
2169. 657	A	1000	1629. 124	A	400
2066. 303	A	500			
2048. 840	A	400			
2027. 964	A	500 ^w			

IRON, $Z=26$

Fe I

I P 7.86 Anal A List A June 1950

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 *and §§ = Blend of Fe I and Fe I, and also of Fe I and Fe II

Fe I

Fe I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2966.901	G	125R	0.00	4.16	4-5	$a^4D - \gamma^4F^o$ (1)	2720.516	U	(1)	0.05	4.59	3-3	$a^4D - \gamma^4F^o$ (4)
2973.237	U	60R	0.05	4.20	3-4		2715.323	U	1	0.09	4.63	2-2	
2973.134	U	60R	0.09	4.24	2-3		2690.067	G	2	0.00	4.59	4-3	
*2970.106	G	40R	0.11	4.26	1-2		2694.222	G	(1)	0.05	4.63	3-2	
2965.255	A	20	0.12	4.28	0-1		2756.264	U	(3)	0.05	4.53	3-4	
2936.904	G	60R	0.00	4.20	4-4		2742.017	U	2	0.09	4.59	2-3	
2947.877	G	60R	0.05	4.24	3-3		2728.973	U	(2)	0.11	4.63	1-2	
2953.940	A	50R	0.09	4.26	2-2								
2957.365	A	30R	0.11	4.28	1-1		2719.027	G	60R	0.00	4.54	4-3	$a^4D - \gamma^4P^o$ (5)
2912.158	A	20r	0.00	4.24	4-3		2720.902	G	40r	0.05	4.59	3-2	
2929.008	A	25r	0.05	4.26	3-2		2723.577	A	15	0.09	4.62	2-1	
2941.343	A	15r	0.09	4.28	2-1		2750.140	G	25r	0.05	4.54	3-3	
							2742.406	G	30r	0.09	4.59	2-2	
2874.172	C	10	0.00	4.29	4-5	$a^4D - \gamma^4G^o$ (2)	2737.310	G	20r	0.11	4.62	1-1	
2869.308	A	10	0.05	4.35	3-4		2772.113	G	1	0.09	4.54	2-3	
2863.864	C	8	0.09	4.40	2-3		2756.329	G	20	0.11	4.59	1-2	
2858.896	G	5	0.11	4.43	1-2		2744.068	G	10	0.12	4.62	0-1	
2835.457	G	6	0.00	4.35	4-4								
2840.422	G	6	0.05	4.40	3-3		2618.708	G	2	0.00	4.71	4-3	$a^4D - \gamma^4D^o$ (6)
2843.923	U	(3)	0.09	4.43	2-2		2612.771	G	2	0.05	4.77	3-2	
2807.245	U	2	0.00	4.40	4-3		2610.750	G	1	0.09	4.81	2-1	
2820.801	G	2	0.05	4.43	3-2		2647.558	C	3	0.05	4.71	3-3	
							2632.593	G	2	0.09	4.77	2-2	
2825.687	V	6	0.00	4.37	4-5	$a^4D - \gamma^4G^o$ (3)	2623.366	U	2	0.11	4.81	1-1	
2827.892	G	5	0.05	4.42	3-4		2667.912	G	1	0.09	4.71	2-3	
*2825.995§	U	(2)	0.09	4.45	2-3		2645.422	G	1	0.11	4.77	1-2	
2795.006	G	3	0.00	4.42	4-4		*2629.579§	G	2	0.12	4.81	0-1	
2803.169	G	(1)	0.05	4.45	3-3								

Fe I—Continued

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2522.848	G	40R	0.00	4.89	4-4	$a^4D - x^4D^o$ (7)	2250.784	G	(10)	0.00	5.48	4-4	$a^4D - y^4D^o$ (16)
2527.433	G	15r	0.05	4.93	3-3		2265.053	C	(20)	0.05	5.50	3-3	
2529.134	G	10r	0.09	4.97	2-2		*2274.088	C	(9)	0.09	5.51	2-2	
2529.833	G	3	0.11	4.99	1-1		2278.614	U	(2)	0.11	5.53	1-1	
2501.130	G	20R	0.00	4.93	4-3		2243.911	U	(1)	0.00	5.50	4-3	
2510.833	G	15R	0.05	4.97	3-2		2259.279	U	(1)	0.05	5.51	3-2	
2518.100	G	12r	0.09	4.99	2-1		2269.093	G	(18)	0.09	5.53	2-1	
2524.290	G	8r	0.11	5.00	1-0		2275.189	G	(8)	0.11	5.56	1-0	
2549.612	G	10r	0.05	4.89	3-4		2272.067	C	(15)	0.05	5.48	3-4	
2545.977	G	10r	0.09	4.93	2-3		*2279.922§	C	(10)	0.09	5.50	2-3	
2540.971	G	10R	0.11	4.97	1-2	$a^4D - y^4P^o$ (8)	2283.653	C	(12)	0.11	5.51	1-2	$a^4D - y^4S^o$ (17)
2535.604	G	8r	0.12	4.99	0-1		2283.299	G	(9)	0.12	5.53	0-1	
2473.156	G	(3)	0.00	4.99	4-4		2267.080	G	(9)	0.05	5.49	3-2	
2512.361	G	(5r)	0.05	4.96	3-3		2281.986	U	(1)	0.09	5.49	2-2	
*2486.372§	G	(10)	0.00	4.96	4-3		2291.624	G	(4)	0.11	5.49	1-2	
*2498.895§	G	10	0.05	4.99	3-4		2210.686	C	(9)	0.00	5.58	4-3	$a^4D - x^4D^o$ (18)
2530.694	C	3	0.09	4.96	2-3		2228.170	C	(10)	0.05	5.59	3-2	
2552.604	G	2	0.11	4.94	1-2		2229.066	U	(5)	0.09	5.62	2-1	
2483.270	G	60R	0.00	4.97	4-5	$a^4D - x^4F^o$ (9)	2231.211	C	(15)	0.05	5.58	3-3	
2488.143	G	40R	0.05	5.01	3-4		2242.579	U	(15)	0.09	5.59	2-2	
2490.642	G	30R	0.09	5.04	2-3		2238.259	U	(2)	0.11	5.62	1-1	
2491.155	G	20R	0.11	5.06	1-2		2245.651	C	(15)	0.09	5.58	2-3	
2489.751	G	15r	0.12	5.08	0-1		2251.865	G	(12)	0.11	5.59	1-2	
2462.645	G	10r	0.00	5.01	4-4		2207.068	C	(6)	0.00	5.59	4-5	$a^4D - y^4G^o$ (19)
2472.910	V	12R	0.05	5.04	3-3		2220.912	U	(2)	0.05	5.61	3-4	
2479.775	G	20R	0.09	5.06	2-2		2228.489	U	(1)	0.09	5.62	2-3	
*2484.186§	G	15R	0.11	5.08	1-1		2186.241	U	(3)	0.00	5.64	4-5	$a^4D - x^4G^o$ (20)
*2447.708§	A	4	0.00	5.04	4-3		2201.117	C	(4)	0.05	5.66	3-4	
2462.178	G	4	0.05	5.06	3-2		2211.234	C	(7)	0.09	5.67	2-3	
2472.875	V	(5)	0.09	5.08	2-1		2217.744	U	(1)	0.11	5.67	1-2	
2487.368	G	(4)	0.09	5.05	2-2	$a^4D - z^4S^o$ (10)	2181.133	U	(1n)	0.00	5.66	4-4	
*2350.408	G	(5)	0.00	5.25	4-3		2197.230	U	(1)	0.05	5.67	3-3	
*2355.327§	G	(2)	0.05	5.29	3-2		2166.769	G	(100)	0.00	5.70	4-3	$a^4D - w^4P^o$ (21)
2373.618	G	(20)	0.05	5.25	3-3		*2178.073	U	(35)	0.05	5.72	3-2	
2371.428	C	(15)	0.09	5.29	2-2		2187.192	C	(40)	0.09	5.73	2-1	
2369.454	G	(8)	0.11	5.32	1-1		2186.483	G	(40)	0.05	5.70	3-3	
2389.971	C	(25)	0.09	5.25	2-3		2191.836	G	(60)	0.09	5.72	2-2	
2381.831	U	(1)	0.11	5.29	1-2		2196.040	C	(50)	0.00	5.73	1-1	
2374.517	C	(10)	0.12	5.32	0-1		2200.723	C	(15)	0.11	5.72	1-2	
2329.637	G	(2)	0.00	5.30	4-5	$a^4D - y^4G^o$ (12)	*2200.370	U	(10r) (5)	0.12	5.73	0-1	
2355.915	U	(1)	0.09	5.33	2-3		2178.073	U	(35)	0.09	5.75	2-1	$a^4D - z^4S^o$ (22)
2341.575	U	(1n)	0.05	5.32	3-4		2186.890	C	(5)	0.11	5.75	1-1	
2298.175	U	10r	0.00	5.37	4-4		2191.202	C	(10)	0.12	5.75	0-1	
2297.785	C	(35d)	0.05	5.42	3-3	$a^4D - w^4D^o$ (14)	*2158.622	U	(1)	0.05	5.77	3-2	$a^4D - y^4P^o$ (23)
2299.218	C	(25)	0.09	5.45	2-2		2183.465	U	(1)	0.11	5.76	1-0	
2296.925	C	(15d)	0.11	5.48	1-1		2172.137	U	(2)	0.09	5.77	2-2	
2276.025	C	(12)	0.00	5.42	4-3		2172.581	C	(6)	0.11	5.79	1-1	
2284.087	C	(40)	0.05	5.45	3-2		2180.866	C	(4)	0.11	5.77	1-2	
2287.248	C	(30)	0.09	5.48	2-1		2176.837	C	(6)	0.12	5.79	0-1	
2294.406	C	(25)	0.11	5.49	1-0		*2139.695	C	(3)	0.00	5.77	4-4	$a^4D - u^4D^o$ (24)
2320.356	C	(40)	0.05	5.37	3-4		2157.792	C	(5)	0.05	5.77	3-3	
2313.102	C	(40)	0.09	5.42	2-3		2164.547	C	(7)	0.09	5.79	2-2	
2308.997	C	(30)	0.11	5.45	1-2		2159.645	U	(4)	0.11	5.82	1-1	
2301.682	C	(20)	0.12	5.48	0-1	$a^4D - w^4F^o$ (15)	2138.589	C	(3)	0.00	5.77	4-3	
2259.511	C	15	0.00	5.46	4-5		*2151.099	C	(3)	0.09	5.82	2-1	
2292.523	C	(30)	0.05	5.43	3-4		2159.92	X	(3)	0.11	5.82	1-0	
2300.140	C	(30)	0.09	5.45	2-3		2158.922	U	(4)	0.05	5.77	3-4	
2303.579	C	(20)	0.11	5.47	1-2		2171.292	G	(40)	0.09	5.77	2-3	
2303.422	C	(15)	0.12	5.48	0-1		2173.212	C	(8)	0.11	5.79	1-2	
2270.860	C	(18)	0.00	5.43	4-4		*2163.860	C	(1)	0.12	5.82	0-1	
2293.845	C	(25)	0.09	5.47	2-2								
2298.657	G	(6)	0.11	5.48	1-1								
2263.476	U	(6)	0.00	5.45	4-3								

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2132.015	C	(4)	0.00	5.79	4-4	$a^4D - x^4F^o$ (25)
2141.715	C	(1)	0.05	5.81	3-3	
2150.182	C	(3)	0.09	5.83	2-2	
*2151.099	C	(2)	0.05	5.79	3-4	
2155.012	U	(3)	0.09	5.81	2-3	
2122.188	N	1	0.00	5.82	4-4	$a^4D - z^4H^o$ (26)
2141.083	U	(1)	0.05	5.82	3-4	
2126.212	U	(1)	0.00	5.80	4-3	$a^4D - w^4D^o$ (27)
*2139.695	C	(2)	0.05	5.82	3-2	
2146.710	U	(2n)	0.09	5.84	2-1	
2145.188	C	(3)	0.05	5.80	3-3	
2153.004	C	(5)	0.09	5.82	2-2	
*2155.238	U	(2)	0.11	5.84	1-1	$a^4D - w^4G^o$ (28)
2161.577	C	(5)	0.11	5.82	1-2	
2159.425	U	(2)	0.12	5.84	0-1	
2108.139	N	12	0.00	5.85	4-5	
2119.125	N	5	0.05	5.87	3-4	
2139.929	U	(2)	0.09	5.85	2-2	$a^4D - 1^o$ (29)
2148.394	U	(1n)	0.11	5.85	1-2	
2142.141	U	(1n)	0.11	5.87	1-1	$a^4D - y^4S^o$ (30)
2103.964	N	1	0.05	5.92	3-4	
2110.233	C	30	0.12	5.97	0-1	$a^4D - v^4F^o$ (31)
2095.451	N	1	0.05	5.94	3-3	
2103.048	N	25	0.09	5.96	2-2	
2106.260	N	20	0.11	5.97	1-1	
2090.380	N	30	0.05	5.96	3-2	
2098.081	N	15p	0.09	5.97	2-1	$a^4D - x^4G^o$ (32)
2108.188	N	1p	0.05	5.91	3-3	
2084.117	N	50	0.00	5.92	4-3	$a^4D - v^4P^o$ (33)
2093.660	N	40	0.05	5.95	3-2	
2100.795	C	30	0.09	5.98	2-1	
2102.349	C	30	0.05	5.92	3-3	
2106.380	N	25	0.09	5.95	2-2	
2108.955	C	30	0.11	5.96	1-1	$a^4D - x^4P^o$ (34)
2115.168	C	20	0.09	5.92	2-3	
2114.588	N	25	0.11	5.95	1-2	
2112.966	C	25	0.12	5.96	0-1	
2087.525	N	25	0.05	5.96	3-2	
2090.862	N	20	0.09	5.99	2-1	$a^4D - x^4P^o$ (34)
2100.144	N	10	0.09	5.96	2-2	
2098.953	N	25	0.11	5.99	1-1	
2108.302	N	12	0.11	5.96	1-2	
2102.910	N	20	0.12	5.99	0-1	
Vac						
1960.129	N	25	0.00	6.30	4-5	$a^4D - u^4F^o$ (35)
1962.100	N	30	0.05	6.34	3-4	
1964.043	N	20	0.09	6.37	2-3	
1963.100	N	25	0.11	6.40	1-2	
1962.031	N	25	0.12	6.41	0-1	
1946.219	N	10	0.00	6.34	4-4	$a^4D - u^4P^o$ (36)
1952.997	N	20	0.05	6.37	3-3	
1956.026	N	30	0.09	6.40	2-2	
*1958.598	N	30	0.11	6.41	1-1	
1937.274	N	35	0.00	6.37	4-3	
1945.070	N	20	0.05	6.40	3-2	$a^4D - u^4P^o$ (36)
*1951.556	N	25	0.09	6.41	2-1	

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High			
Vac							
1957. 831	N	25	0. 00	6. 31	4-4	$a^4D - t^4D^o$ (36)	
1962. 871	N	20	0. 05	6. 34	3-3		
1963. 629	N	15	0. 09	6. 37	2-2		
1962. 746	N	15	0. 11	6. 40	1-1		
1946. 978	N	25	0. 00	6. 34	4-3		
1952. 596	N	30	0. 05	6. 37	3-2		
*1955. 690	N	20	0. 09	6. 40	2-1		
1958. 739	N	15	0. 11	6. 41	1-0		
1973. 911	N	1	0. 05	6. 31	3-4		
1974. 059	N	1	0. 09	6. 34	2-3		
1970. 771	N	0	0. 11	6. 37	1-2		
1934. 528	N	25	0. 00	6. 38	4-3	$a^4D - u^4P^o$ (37)	
1940. 649	N	25	0. 05	6. 41	3-2		
1945. 294	N	25	0. 09	6. 43	2-1		
1950. 223	N	20	0. 05	6. 38	3-3		
*1951. 556	N	25	0. 09	6. 41	2-2		
*1952. 262	N	20	0. 11	6. 43	1-1		
1961. 236	N	20	0. 09	6. 38	2-3		
*1958. 598	N	30	0. 11	6. 41	1-2		
*1955. 690	N	20	0. 12	6. 43	0-1		
1903. 37	N	1	0. 05	6. 54	3-3		
1873. 052	N	12	0. 00	6. 59	4-3	$a^4D - t^4P^o$ (39)	
1862. 318	N	15	0. 05	6. 68	3-2		
1866. 815	N	10	0. 09	6. 70	2-1		
1887. 761	N	14	0. 05	6. 59	3-3		
1872. 359	N	15	0. 09	6. 68	2-2		
1873. 259	N	15	0. 11	6. 70	1-1		
1878. 849	N	2	0. 11	6. 68	1-2		
1876. 421	N	10	0. 12	6. 70	0-1		
1863. 54	N	0p	0. 00	6. 62	4-3		$a^4D - y^4F^o$ (40)
1888. 32	N	12n	0. 09	6. 62	2-3		
1855. 58	N	15	0. 00	6. 65	4-3	$a^4D - 10^o$ (41)	
1880. 14	G	5	0. 09	6. 65	2-3		
1866. 07	N	12	0. 05	6. 67	3-3	$a^4D - 11^o$ (42)	
Air							
2843. 631	G	10	0. 91	5. 25	4-3	$a^4F - x^4P^o$ (43)	
2845. 595	C	8	0. 95	5. 29	3-2		
2848. 713	G	5	0. 99	5. 32	2-1		
2872. 333	G	7	0. 95	5. 25	3-3		
2866. 624	G	7	0. 99	5. 29	2-2		
2862. 496	G	4	1. 01	5. 32	1-1		
2893. 763	V	1	0. 99	5. 25	2-3		
2880. 575	G	2	1. 01	5. 29	1-2		
2788. 106	G	30	0. 86	5. 28	5-6		$a^4F - y^4G^o$ (44)
2813. 288	A	30R	0. 91	5. 30	4-5		
2832. 436	A	25r	0. 95	5. 31	3-4		
2843. 977	G	20r	0. 99	5. 33	2-3		
2851. 798	A	15r	1. 01	5. 33	1-2		
2778. 221	A	20	0. 86	5. 30	5-5		
2804. 521	A	20	0. 91	5. 31	4-4		
2823. 276	A	20	0. 95	5. 33	3-3		
2838. 120	A	10	0. 99	5. 33	2-2		
2769. 670	G	1	0. 86	5. 31	5-4		
2795. 540	G	(2)	0. 91	5. 33	4-3		
2817. 505	G	6	0. 95	5. 33	3-2		

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
*2746.982§	C	20	0.86	5.35	5-6	$a^4F - z^4H^\circ$ (45)
2806.984	C	20	0.91	5.31	4-5	
2825.557	G	20	0.95	5.32	3-4	
2828.808	G	7	0.99	5.35	2-3	
2772.083	V	20	0.86	5.31	5-5	
2797.775	C	15	0.91	5.32	4-4	
2808.328	G	2	0.95	5.35	3-3	
m2763.09	P	Fe I	0.86	5.32	5-4	
2733.581	G	15	0.86	5.37	5-4	$a^4F - w^4D^\circ$ (46)
2735.475	A	8	0.91	5.42	4-3	
2742.256	U	20	0.95	5.45	3-2	
2744.526	G	8	0.99	5.48	2-1	
2753.687	G	3	1.01	5.49	1-0	
*2767.523§	A	20	0.91	5.37	4-4	
2762.027	G	15	0.95	5.42	3-3	
*2761.780§	G	18	0.99	5.45	2-2	$a^4F - w^4F^\circ$ (47)
2757.315	G	10	1.01	5.48	1-1	
2794.700	G	(1)	0.95	5.37	3-4	
2781.835	C	4	0.99	5.42	2-3	
*2774.730§	G	3	1.01	5.45	1-2	
2679.062	A	10	0.86	5.46	5-5	
2728.020	G	3	0.91	5.43	4-4	
2743.564	G	3	0.95	5.45	3-3	$a^4F - v^4D^\circ$ (48)
2754.030	G	3	0.99	5.47	2-2	
2759.814	G	4	1.01	5.48	1-1	
2695.032	G	1	0.86	5.43	5-4	
2717.368	G	(1)	0.91	5.45	4-3	
2734.613	G	(1)	0.95	5.47	3-2	
m2747.00	P	Fe I	0.99	5.48	2-1	
2711.655	C	4	0.91	5.46	4-5	$a^4F - y^4S^\circ$ (49)
2754.427	G	2	0.95	5.43	3-4	
2763.108	C	4	0.99	5.45	2-3	
2766.909	G	2	1.01	5.47	1-2	
2666.811	G	8	0.86	5.48	5-4	
2689.212	A	8	0.91	5.50	4-3	
*2706.581§	C	8	0.95	5.51	3-2	
2718.435	C	6	0.99	5.53	2-1	$a^4F - x^4D^\circ$ (50)
2726.054	G	6	1.01	5.56	1-0	
2699.107	A	6	0.91	5.48	4-4	
2714.868	G	1	0.95	5.50	3-3	
2725.606	U	(2)	0.99	5.51	2-2	
2730.981	G	2	1.01	5.53	1-1	
*2724.951§	G	10	0.95	5.48	3-4	
2734.002	G	2	0.99	5.50	2-3	$a^4F - w^4G^\circ$ (51)
2738.210	G	(2)	1.01	5.51	1-2	
2717.786	G	2	0.95	5.49	3-2	
*2736.960§	G	(3)	0.99	5.49	2-2	
2641.645	G	4	0.91	5.58	4-3	
2662.056	C	3	0.95	5.59	3-2	
2661.196	U	(2)	0.99	5.62	2-1	
2668.398	G	2	0.95	5.58	3-3	$a^4F - y^4G^\circ$ (52)
2680.452	G	2	0.99	5.59	2-2	
2673.213	C	1	1.01	5.62	1-1	
2684.857	U	(2)	0.99	5.58	2-3	
2692.658	U	(3)	1.01	5.59	1-2	
2605.656	G	6	0.86	5.59	5-5	
2636.477	C	1	0.91	5.59	4-5	
*2651.706§	G	2	0.95	5.61	3-4	$a^4F - z^4G^\circ$ (53)
2660.396	G	1	0.99	5.62	2-3	
2584.536	A	8	0.86	5.63	5-6	
2606.826	G	6	0.91	5.64	4-5	
2623.532	G	5	0.95	5.66	3-4	
2635.808	A	8	0.99	5.67	2-3	
2643.997	C	8	1.01	5.67	1-2	
2576.688	G	4	0.86	5.64	5-5	$a^4F - z^4I^\circ$ (54)
2599.565	U	6	0.91	5.66	4-4	
2618.018	G	5	0.95	5.67	3-3	
2632.238	G	4	0.99	5.67	2-2	
2569.595	G	(6)	0.86	5.66	5-4	
2594.150	G	1	0.91	5.67	4-3	
2614.494	G	1	0.95	5.67	3-2	
2556.862	G	1	0.86	5.68	5-6	$a^4F - y^4P^\circ$ (55)
*2579.266	G	(4)	0.91	5.70	4-5	
*2568.862§	G	(5)	0.99	5.79	2-1	
2595.422	G	(2)	1.01	5.76	1-0	
2580.450	G	(2)	0.99	5.77	2-2	
2580.062	G	(2)	1.01	5.79	1-1	
2539.355	G	(7)	0.91	5.77	4-3	
2552.827	G	(4)	0.95	5.79	3-2	$a^4F - u^4D^\circ$ (56)
*2562.224	G	(5)	1.01	5.82	1-0	
*2569.742§	G	(4)	0.99	5.79	2-2	
2561.852	G	(3)	1.01	5.82	1-1	
2563.820	V	(2)	0.95	5.77	3-4	
*2579.266	G	(4)	0.99	5.77	2-3	
2501.692	G	(6)	0.86	5.79	5-4	
2532.874	G	(2)	0.95	5.83	3-2	$a^4F - x^4F^\circ$ (57)
2539.575	U	(1)	0.95	5.81	3-3	
2560.556	G	(4)	1.01	5.83	1-2	
*2495.869§	G	(5)	0.86	5.80	5-6	
2522.488	G	(6)	0.91	5.80	4-5	
2494.250	G	(5)	0.86	5.80	5-5	
2516.249	G	(2)	0.91	5.82	4-4	
2521.917	G	(7)	0.91	5.80	4-3	$a^4F - w^4D^\circ$ (58)
m2536.79	P	Fe I	0.95	5.82	3-2	
2555.648	G	(1)	1.01	5.84	1-1	
2561.262	U	(2)	0.99	5.80	2-3	
2564.555	G	(4)	1.01	5.82	1-2	
*2472.343	G	5	0.86	5.85	5-6	
2496.532	C	6	0.91	5.85	4-5	
2507.899	C	6	0.95	5.87	3-4	$a^4F - w^4G^\circ$ (59)
2517.658	G	(8)	0.99	5.89	2-3	
2519.628	C	(10)	1.01	5.90	1-2	
2468.878	C	4	0.86	5.85	5-5	
2485.989	G	(10)	0.91	5.87	4-4	
2458.564	G	(4)	0.86	5.87	5-4	
2535.128	G	(5)	0.99	5.85	2-2	
2516.569	G	(5)	0.95	5.86	3-4	$a^4F - z^4I^\circ$ (60)
2457.596	C	6	0.86	5.88	5-5	
2465.148	C	6	0.91	5.92	4-4	
2474.813	C	(8)	0.95	5.94	3-3	
2483.531	G	10	0.99	5.96	2-2	
2487.064	C	(12)	1.01	5.97	1-1	
2438.181	C	2	0.86	5.92	5-4	
2453.475	C	5	0.91	5.94	4-3	$a^4F - z^4G^\circ$ (61)
2467.730	G	(5)	0.95	5.96	3-2	
2476.654	G	3	0.99	5.97	2-1	
2486.690	G	(10)	0.95	5.92	3-4	
*2493.998	G	(6)	1.01	5.96	1-2	
2457.596	C	6	0.86	5.88	5-5	
2465.148	C	6	0.91	5.92	4-4	
2474.813	C	(8)	0.95	5.94	3-3	$a^4F - y^4F^\circ$ (62)
2483.531	G	10	0.99	5.96	2-2	
2487.064	C	(12)	1.01	5.97	1-1	
2438.181	C	2	0.86	5.92	5-4	
2453.475	C	5	0.91	5.94	4-3	
2467.730	G	(5)	0.95	5.96	3-2	
2476.654	G	3	0.99	5.97	2-1	
2486.690	G	(10)	0.95	5.92	3-4	
*2493.998	G	(6)	1.01	5.96	1-2	

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2584.536	A	8	0.86	5.63	5-6	$a^4F - z^4G^\circ$ (52)
2606.826	G	6	0.91	5.64	4-5	
2623.532	G	5	0.95	5.66	3-4	
2635.808	A	8	0.99	5.67	2-3	
2643.997	C	8	1.01	5.67	1-2	
2576.688	G	4	0.86	5.64	5-5	
2599.565	U	6	0.91	5.66	4-4	
2618.018	G	5	0.95	5.67	3-3	
2632.238	G	4	0.99	5.67	2-2	
2569.595	G	(6)	0.86	5.66	5-4	
2594.150	G	1	0.91	5.67	4-3	
2614.494	G	1	0.95	5.67	3-2	
2556.862	G	1	0.86	5.68	5-6	$a^4F - z^4I^\circ$ (53)
*2579.266	G	(4)	0.91	5.70	4-5	
*2568.862§	G	(5)	0.99	5.79	2-1	$a^4F - y^4P^\circ$ (54)
2595.422	G	(2)	1.01	5.76	1-0	
2580.450	G	(2)	0.99	5.77	2-2	
2580.062	G	(2)	1.01	5.79	1-1	
2539.355	G	(7)	0.91	5.77	4-3	$a^4F - u^4D^\circ$ (55)
2552.827	G	(4)	0.95	5.79	3-2	
*2562.224	G	(5)	1.01	5.82	1-0	
			0.95	5.77	3-3	
*2569.742§	G	(4)	0.99	5.79	2-2	
2561.852	G	(3)	1.01	5.82	1-1	
2563.820	V	(2)	0.95	5.77	3-4	
*2579.266	G	(4)	0.99	5.77	2-3	
2501.692	G	(6)	0.86	5.79	5-4	$a^4F - x^4F^\circ$ (56)
2532.874	G	(2)	0.95	5.83	3-2	
2539.575	U	(1)	0.95	5.81	3-3	
2560.556	G	(4)	1.01	5.83	1-2	
*2495.869§	G	(5)	0.86	5.80	5-6	$a^4F - z^4H^\circ$ (57)
2522.488	G	(6)	0.91	5.80	4-5	
2494.250	G	(5)	0.86	5.80	5-5	
2516.249	G	(2)	0.91	5.82	4-4	
2521.917	G	(7)	0.91	5.80	4-3	$a^4F - w^4D^\circ$ (58)
m2536.79	P	Fe I	0.95	5.82	3-2	
2555.648	G	(1)	1.01	5.84	1-1	
2561.262	U	(2)	0.99	5.80	2-3	
2564.555	G	(4)	1.01	5.82	1-2	
*2472.343	G	5	0.86	5.85	5-6	$a^4F - w^4G^\circ$ (59)
2496.532	C	6	0.91	5.85	4-5	
2507.899	C	6	0.95	5.87	3-4	
2517.658	G	(8)	0.99	5.89	2-3	
2519.628	C	(10)	1.01	5.90	1-2	
2468.878	C	4	0.86	5.85	5-5	
2485.989	G	(10)	0.91	5.87	4-4	
2458.564	G	(4)	0.86	5.87	5-4	
2535.128	G	(5)	0.99	5.85	2-2	$a^4F - 1^\circ$ (60)
2516.569	G	(5)	0.95	5.86	3-4	$a^4F - z^4I^\circ$ (61)
2457.596	C	6	0.86	5.88	5-5	$a^4F - v^4F^\circ$ (62)
2465.148	C	6	0.91	5.92	4-4	
2474.813	C	(8)	0.95	5.94	3-3	
2483.531	G	10	0.99	5.96	2-2	
2487.064	C	(12)	1.01	5.97	1-1	
2438.181	C	2	0.86	5.92	5-4	
2453.475	C	5	0.91	5.94	4-3	
2467.730	G	(5)	0.95	5.96	3-2	
2476.654	G	3	0.99	5.97	2-1	
2486.690	G	(10)	0.95	5.92	3-4	
*2493.998	G	(6)	1.01	5.96	1-2	

Fe I—Continued

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2443.871	C	(20)	0.86	5.91	5-5	$a^4F - z^4G^o$	2154.458	C	(2)	0.86	6.58	5-4	$a^4F - 9^o$
*2472.343	G	5	0.91	5.90	4-4	(63)							(77)
2492.64	W	(2)	0.95	5.91	3-3		*2155.238	U	(2)	0.95	6.68	3-2	$a^4F - t^4P^o$
2445.210	G	(6)	0.86	5.90	5-4		2189.393	U	(1n)	0.95	6.59	3-3	(78)
*2470.961	G	(4)	0.91	5.91	4-3		2176.396	U	(1)	0.95	6.62	3-3	$a^4F - y^4F^o$
*2493.998	G	(6)	0.95	5.90	3-4								(79)
2508.751	G	(5)	0.99	5.91	2-3		2149.170	U	(1)	0.91	6.65	4-3	$a^4F - 10^o$
2420.390	G	(2)	0.86	5.95	5-5	$a^4F - w^4G^o$	2165.537	U	(1n)	0.95	6.65	3-3	(80)
						(64)							
*2463.728	G	(6)	0.95	5.96	3-2	$a^4F - z^4P^o$	2133.311	U	(1)	0.91	6.70	4-4	$a^4F - t^4G^o$
2479.478	G	6	0.99	5.96	2-2	(65)	2113.08	N	20	0.86	6.70	5-4	(81)
2476.861	G	(2)	1.01	5.99	1-1		2149.416	U	(1)	0.95	6.70	3-4	
2419.058	G	(2)	0.91	6.01	4-4	$a^4F - y^4G^o$	2144.576	U	(1)	0.99	6.74	2-3	
						(66)	2160.236	U	(1)	0.95	6.67	3-3	$a^4F - 11^o$
*2408.045	G	(3)	0.95	6.08	3-3	$a^4F - w^4F^o$							(82)
*2423.094	G	(4)	0.99	6.08	2-3	(67)	m2110.23	P	Fe I	0.86	6.70	5-4	$a^4F - 13^o$
*2408.045	G	(3)	0.95	6.08	3-2	$a^4F - v^4D^o$	2130.417	U	(1)	0.91	6.70	4-4	(83)
2419.879	G	(2)	0.99	6.09	2-1	(68)	2016.512	N	5	0.91	7.03	4-4	$a^4F - v^4G^o$
*2423.094	G	(4)	0.99	6.08	2-2								(84)
2429.810	G	(4)	1.01	6.09	1-1								
*2350.408	G	(5)	0.86	6.11	5-5	$a^4F - v^4G^o$	2989.39	P	(1)	1.60	5.73	2-17	$a^4F - w^4P^o$
2385.92	P	(1)	0.95	6.13	3-4	(69)							(85)
2267.465	G	(15)	0.86	6.30	5-5	$a^4F - u^4F^o$	2877.300	C	8	1.48	5.77	4-4	$a^4F - u^4D^o$
2271.781	C	(40)	0.91	6.34	4-4	(70)	*2875.302	G	5	1.48	5.77	4-3	(86)
2277.663	G	(12)	0.95	6.37	3-3		2912.257	V	3	1.55	5.79	3-2	
2280.222	G	(8)	0.99	6.40	2-2		2922.383	U	(1)	1.60	5.82	2-1	
2282.861	G	(4)	1.01	6.41	1-1		2863.429	G	8	1.48	5.79	4-4	$a^4F - z^4F^o$
2248.858	C	(25)	0.86	6.34	5-4		2895.035	C	8	1.55	5.81	3-3	(87)
2266.903	G	(10)	0.95	6.40	3-2		2920.691	C	5	1.60	5.83	2-2	
*2274.088	C	(9)	0.99	6.41	2-1		2846.830	G	3	1.48	5.81	4-3	
2290.771	G	(3)	0.91	6.30	4-5		2886.316	G	3	1.55	5.83	3-2	
2290.064	G	(3) Ni?	0.95	6.34	3-4		2929.618	V	2	1.60	5.81	2-3	
*2291.122	C	(15)	0.99	6.37	2-3								
2289.032	G	(10)	1.01	6.40	1-2		2853.685	V	(2)	1.48	5.80	4-5	$a^4F - z^4H^o$
2264.389	C	(45)	0.86	6.31	5-4	$a^4F - t^4D^o$	2893.882	V	2	1.55	5.82	3-4	(88)
2272.816	G	(8)	0.91	6.34	4-3	(71)	2845.714	U	(2)	1.48	5.82	4-4	
2277.098	C	(9)	0.95	6.37	3-2								
2283.079	G	(9)	1.01	6.41	1-0		2852.952	G	(1)	1.48	5.80	4-3	$a^4F - w^4D^o$
2287.632	C	(15)	0.91	6.31	4-4		2891.410	U	(1)	1.55	5.82	3-2	(89)
*2291.122	C	(15)	0.95	6.34	3-3		2914.305	G	3	1.60	5.84	2-1	
2290.546	G	(9)	0.99	6.37	2-2		2901.381	G	5	1.55	5.80	3-3	
2306.164	G	(2)	0.95	6.31	3-4		2925.899	V	4	1.60	5.82	2-2	
*2304.727	G	(5)	0.99	6.34	2-3		2936.12	P	(1)	1.60	5.80	2-3	
2299.453	U	(1)	1.01	6.37	1-2?								
2247.461	U	(1)	0.86	6.35	5-4	$a^4F - 4^o$	2845.544	U	(1)	1.55	5.89	3-3	$a^4F - w^4G^o$
						(72)	2867.560	G	3	1.60	5.90	2-2	(90)
2255.861	C	(45)	0.91	6.38	4-3	$a^4F - u^4P^o$	*2834.414	U	(1)	1.55	5.90	3-2	
m2260.86	P	Fe I	0.95	6.41	3-2	(73)	2867.880	U	(1)	1.55	5.85	3-2	$a^4F - 1^o$
2265.61	X	(1)	0.99	6.43	2-1								(91)
2292.79	X	(1)	1.01	6.39	1-2	$a^4F - 7^o$	2805.808	G	(1)	1.48	5.88	4-5	$a^4F - v^4F^o$
						(74)	2826.50	U	(3)	1.55	5.92	3-4	(92)
2241.85	X	(1)	0.91	6.42	4-3	$a^4F - u^4D^o$	2811.160	U	(1n)	1.55	5.94	3-3	
2245.14	X	(1)	0.99	6.48	2-1	(75)	*2834.414	U	(1)	1.60	5.96	2-2	
2193.411	U	(2)	0.91	6.54	4-3	$a^4F - s^4D^o$	2765.70	U	(1)	1.48	5.94	4-3	
						(76)	2787.935	U	5	1.48	5.91	4-5	$a^4F - z^4G^o$
							2835.948	G	(1)	1.55	5.90	3-4	(93)
							2867.311	G	3	1.60	5.91	2-3	
							2834.177	U	(1)	1.55	5.91	3-3	

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2807.96	U	(1)	1.55	5.95	3-2	$a^3F - v^3P^o$ (94)
2792.397	G	1	1.55	5.97	3-4	$a^3F - w^3G^o$ (95)
2815.506	G	3	1.60	5.98	2-3	
2796.871	G	(1)	1.55	5.96	3-2	$a^3F - x^3P^o$ (96)
2812.31	U	(1)	1.60	5.99	2-1	
2722.032	U	(2)	1.48	6.01	4-4	$a^3F - y^1G^o$ (97)
2692.247	G	(2)	1.48	6.06	4-4	$a^3F - w^3F^o$ (98)
2741.578	U	(2)	1.60	6.10	2-2	
2656.792	G	(2)	1.48	6.12	4-5	$a^3F - y^3H^o$ (99)
2689.827	G	2	1.55	6.14	3-4	
2666.970	U	3	1.48	6.11	4-5	$a^3F - v^3G^o$ (100)
2697.019	G	2	1.55	6.13	3-4	
2710.543	G	2	1.60	6.15	2-3	
2655.14	U	(1)	1.48	6.13	4-4	
2680.91	U	(1)	1.55	6.15	3-3	
2557.268	G	(1)	1.48	6.30	4-5	$a^3F - x^3H^o$ (101)
2537.454	G	(5)	1.48	6.34	4-5	$a^3F - u^3G^o$ (102)
2556.298	U	(4)	1.55	6.38	3-4	
2572.752	G	(4)	1.60	6.40	2-3	
*2571.575	W	(3)	1.55	6.35	3-	$a^3F - 5^o$ (103)
2598.855	U	(1)	1.60	6.35	2-?	
2515.848	G	(2)	1.55	6.46	3-2	$a^3F - u^3D^o$ (104)
2417.490	G	(2)	1.48	6.58	4-4	$a^3F - 9^o$ (105)
2398.215	U	(1)	1.48	6.62	4-3	$a^3F - y^1F^o$ (106)
2365.509	U	(1n)	1.48	6.70	4-4	$a^3F - t^3G^o$ (107)
2377.991	U	(2)	1.55	6.74	3-3	
2300.599	U	(1)	1.48	6.84	4-5	$a^3F - v^3H^o$ (108)
2295.535	U	(1n)	1.48	6.85	4-5	$a^3F - x^3H^o$ (109)
2281.66	X	(1)	1.48	6.89	4-3	$a^3F - w^1F^o$ (110)
2275.593	G	(2)	1.48	6.90	4-5	$a^3F - s^3G^o$ (111)
2306.378	G	(4)	1.55	6.90	3-4	
2317.892	G	(2)	1.60	6.93	2-3	
2240.627	C	(4)	1.48	6.99	4-4	$a^3F - u^3F^o$ (112)
2260.594	U	(2)	1.55	7.01	3-3	
2256.750	U	(1)	1.55	7.02	3-2	
2222.75	G	(7)	1.48	7.03	4-4	$a^3F - v^1G^o$ (113)
2193.564	U	(2)	1.48	7.10	4-4	$a^3F - t^3F^o$ (114)
2217.578	U	(1n)	1.55	7.12	3-3	
2234.432	U	(2)	1.60	7.12	2-2	
2189.183	U	(1)	1.48	7.12	4-3	
2237.814	U	(2n)	1.60	7.12	2-3	

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2058.100	N	1	1.48	7.47	4-5	$a^3F - t^3H^o$ (115)
2047.241	N	2	1.48	7.51	4-3?	$a^3F - q^3G^o$ (116)
2934.370	U	(1)	2.17	6.37	3-3	$a^3P - u^3F^o$ (117)
2981.852	G	6	2.17	6.31	3-4	$a^3P - t^3D^o$ (118)
2972.277	G	3	2.19	6.34	2-3	
2966.26	U	(2)	2.21	6.37	1-2	
2956.71	U	(1)	2.17	6.34	3-3	
2948.733	U	(2)	2.19	6.37	2-2	$a^3P - v^3F^o$ (119)
2939.072	G	(1)	2.21	6.41	1-0	
2961.70	U	(1)	2.17	6.33	3-4	$a^3P - 5^o$ (120)
2950.240	G	20n	2.17	6.35	3-	
2928.105	U	(2)	2.17	6.38	3-3	$a^3P - u^3P^o$ (121)
2924.59	P	(1n)	2.21	6.43	1-1	
*2907.518	G	5	2.19	6.43	2-1	
2922.62	V	(1n)	2.17	6.39	3-2	$a^3P - 7^o$ (122)
2937.806	G	10n	2.19	6.39	2-2	
2770.695	G	(1)	2.19	6.64	2-1	$a^3P - v^3P^o$ (123)
2840.932	U	(3)	2.19	6.53	2-2	
2786.18	U	(1)	2.21	6.64	1-1	
*2857.205	W	(1)	2.21	6.53	1-2	
2794.157	U	(1)	2.17	6.58	3-4	$a^3P - 9^o$ (124)
2789.477	G	(2)	2.17	6.59	3-3	$a^3P - t^3P^o$ (125)
2747.553	G	(3)	2.19	6.68	2-2	
2750.708	U	(1)	2.21	6.70	1-1	
2734.266	G	2	2.17	6.68	3-2	
2735.614	U	8	2.19	6.70	2-1	
2762.770	G	(3)	2.21	6.68	1-2	
2768.432	G	(2)	2.17	6.62	3-3	$a^3P - y^1F^o$ (126)
2782.055	U	(1)	2.19	6.62	2-3	
2774.15	U	(1)	2.19	6.64	2-3	$a^3P - x^1F^o$ (127)
*2750.8725	G	5	2.17	6.65	3-3	$a^3P - 10^o$ (128)
2764.323	G	3	2.19	6.65	2-3	
2720.194	G	(3)	2.17	6.70	3-4	$a^3P - 13^o$ (129)
2567.86	W	(3)	2.21	7.02	1-2	$a^3P - u^3F^o$ (130)
2976.126	G	5	2.27	6.42	2-3	$a^3P - u^3D^o$ (131)
3053.065	G	5	2.41	6.46	1-2	
3078.436	V	3	2.47	6.48	0-1	
2947.363	U	(2)	2.27	6.46	2-2	
3033.101	U	(1)	2.41	6.48	1-1	
2928.753	U	(3)	2.27	6.48	2-1	
2954.651	G	5	2.27	6.45	2-3	$a^3P - t^3D^o$ (132)
3063.933	U	(2)	2.41	6.44	1-1?	
2957.491	U	(2)	2.27	6.44	2-1?	

Fe I—Continued

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2899.416	C	8	2.27	6.53	2-1	$a^1P - 8^\circ$ (133)	Air 2769.297	G	(6)	2.39	6.85	6-6	$a^1H - v^1H^\circ$ (151)
2894.505	C	10	2.27	6.53	2-2	$a^1P - v^1P^\circ$ (134)	2791.786	G	(2)	2.42	6.84	5-5	
2918.354	V	3	2.41	6.64	1-1		2803.613	G	(2)	2.44	6.84	4-4	
2821.63	U	(1)	2.27	6.64	2-1		2773.907	U	(1)	2.39	6.84	6-5	
2996.386	G	5	2.41	6.53	1-2		2787.12	U	(1)	2.42	6.85	5-6	
2960.299	U	1	2.47	6.64	0-1		2784.346	U	(2)	2.42	6.85	5-5	$a^1H - x^1H^\circ$ (152)
*2868.454§	G	3	2.27	6.57	2-1	$a^1P - z^1P^\circ$ (135)	*2737.643§	V	(2)	2.39	6.90	6-5	$a^1H - s^1G^\circ$ (153)
2968.481	U	(2)	2.41	6.57	1-1		2755.184	U	(3)	2.42	6.90	5-4	
2920.29	U	(1)	2.47	6.70	0-1	$a^1P - t^1P^\circ$ (136)	2706.012	G	4	2.39	6.95	6-6	$a^1H - u^1H^\circ$ (154)
2879.461	U	(1)	2.41	6.70	1-1		2719.418	G	3	2.42	6.96	5-5	
2833.401	U	(2)	2.27	6.62	2-3	$a^1P - y^1F^\circ$ (137)	2728.819	G	2	2.44	6.97	4-4	
2815.017	G	(1)	2.27	6.65	2-3	$a^1P - 10^\circ$ (138)	2702.453	U	(2)	2.39	6.96	6-5	
2806.072	G	(1)	2.27	6.67	2-3	$a^1P - 11^\circ$ (139)	*2716.41§	U	(1)	2.42	6.97	5-4	
2674.71	U	(1)	2.27	6.88	2-2	$a^1P - w^1D^\circ$ (140)	2716.259	V	(2)	2.44	6.99	4-4	$a^1H - u^1F^\circ$ (155)
2761.48	P	(1)	2.41	6.88	1-2		2656.145	G	3	2.39	7.04	6-7	$a^1H - x^1I^\circ$ (156)
2941.77	U	(1)	2.41	6.61	4-3	$z^1D^\circ - h^1D$ (141)	2669.492	G	2	2.42	7.05	5-6	
2930.59	P	(1)	2.47	6.68	1-1?		2439.743	G	(25)	2.39	7.45	6-6	$a^1H - t^1H^\circ$ (157)
2901.910	G	5	2.39	6.64	5-5	$z^1D^\circ - g^1D$ (142)	2442.567	C	(20)	2.42	7.47	5-5	
2892.479	G	(1)	2.41	6.68	4-4		2440.106	G	(15)	2.44	7.50	4-4	
2874.89	W	(3)	2.39	6.68	5-4		2452.590	G	(2)	2.44	7.47	4-5	
2868.213	G	(1)	2.44	6.74	3-2		2873.655	U	(2)	2.55	6.84	4-5	$b^1F - v^1H^\circ$ (158)
2869.833	U	(2)	2.46	6.76	2-1		2834.755	G	(2)	2.55	6.90	4-5	$b^1F - s^1G^\circ$ (159)
2919.838	G	(2)	2.41	6.64	4-5		2853.774	U	(3)	2.58	6.90	3-4	
2908.864	V	(2)	2.44	6.68	3-4		2851.52	W	(2)	2.60	6.93	2-3	
2897.60	P	(1)	2.46	6.72	2-3		2819.51	P	(2)	2.55	6.93	4-3	
2889.991	V	(2)	2.47	6.74	1-2		2780.700	U	1	2.55	6.99	4-4	$b^1F - u^1F^\circ$ (160)
2696.284	G	(5)	2.39	6.97	5-	$z^1D^\circ - 1$ (143)	2784.017	U	(2)	2.58	7.01	3-3	
2694.536	G	(5)	2.39	6.97	5-	$z^1D^\circ - 2$ (144)	2766.03	U	(1)	2.55	7.01	4-3	
2709.989	G	(2)	2.41	6.97	4-		2708.570	G	4	2.55	7.10	4-4	$b^1F - t^1F^\circ$ (161)
2681.586	G	(2)	2.41	7.02	4-	$z^1D^\circ - 3$ (145)	m2719.06	P	Fe I	2.58	7.12	3-3	
2695.662	U	(2gn)	2.44	7.02	3-		*2726.237§	G	(2)	2.60	7.12	2-2	
2593.510	G	(3)	2.39	7.15	5-5	$z^1D^\circ - h^1D$ (146)	2701.908	G	(2)	2.55	7.12	4-3	
2965.811	U	2	2.42	6.58	5-4	$a^1H - 9^\circ$ (147)	2714.062	U	(2)	2.58	7.12	3-2	
2931.420	U	(2)	2.44	6.65	4-3	$a^1H - 10^\circ$ (148)	2725.805	U	(1)	2.58	7.10	3-4	
2889.89	W	(3)	2.39	6.66	6-5	$a^1H - t^1G^\circ$ (149)	2731.281	U	(2)	2.60	7.12	2-3	
2887.961	U	(1)	2.42	6.70	5-4		2454.706	G	6	2.55	7.40	4-5	$b^1F - r^1G^\circ$ (162)
2871.73	U	(1)	2.44	6.74	4-3		2543.920	G	6	2.58	7.43	3-4	
2909.313	U	(1)	2.42	6.66	5-5		2542.101	C	6	2.60	7.45	2-3	
2887.36	W	(1)	2.39	6.67	6-5	$a^1H - 12^\circ$ (150)	2523.91	W	(3)	2.55	7.43	4-4	
							2531.51	P	(1)	2.58	7.45	3-3	
							2505.004	G	(3)	2.55	7.47	4-5	$b^1F - t^1H^\circ$ (163)
							2506.569	G	(4)	2.58	7.50	3-4	
							2491.983	G	(8)	2.55	7.50	4-4	
							2496.992	G	(4)	2.55	7.49	4-5	$b^1F - g^1G^\circ$ (164)
							2513.847	G	(3)	2.60	7.51	2-3	
							2492.17	W	(2)	2.55	7.50	4-4	
							2503.491	G	(3)	2.58	7.51	3-3	
							2488.942	G	(6)	2.55	7.51	4-3	
							2956.86	U	(2n)	2.68	6.85	5-5	$a^1G - x^1H^\circ$ (165)

Fe II

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 * and † = Blend Fe I and Fe II, as well as blend Fe II and Fe II

Fe II

Fe II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2599.395	A	14	0.00	4.75	4½-4½	a °D - z °D° (1)	2146.058	B	10b	0.05	5.80	3½-2½	a °D - z °P° (6)
2611.873	A	13	0.05	4.77	3½-3½		2139.676	B	25b	0.08	5.85	2½-1½	
2617.618	A	12	0.08	4.80	2½-2½		2137.735	B	15b	0.11	5.88	1½-0½	
2620.408	A	6	0.11	4.82	1½-1½		2159.152	B	10b	0.08	5.80	2½-2½	
2621.669	A	10	0.12	4.83	0½-0½		2153.874	B	1	0.12	5.85	0½-1½?	
2585.876	A	13	0.00	4.77	4½-3½								
2598.369	A	14	0.05	4.80	3½-2½								
2607.086	A	13	0.08	4.82	2½-2½		Vac						
2613.820	A	13	0.11	4.83	1½-0½		1848.231	B	5	0.05	6.73	3½-	a °D - z °P° (7)
2625.664	A	13	0.05	4.75	3½-4½		1857.935	B	12	0.08	6.73	2½-	
2631.321	A	13	0.08	4.77	2½-3½								
*2631.045	A	13	0.11	4.80	1½-2½								
2628.291	A	13	0.12	4.82	0½-1½								
2382.034 †	A	9	0.00	5.18	4½-5½	a °D - z °F° (2)	1608.446	B	35	0.00	7.68	4½-3½	a °D - y °P° (8)
2395.627	A	9	0.05	5.20	3½-4½		1621.685	B	30	0.05	7.66	3½-2½	
2404.882	A	9	0.08	5.21	2½-3½		1631.124	B	30	0.08	7.65	2½-1½	
2410.521	A	9	0.11	5.23	1½-2½		1618.464	B	25	0.05	7.68	3½-3½	
2413.308	A	9	0.12	5.23	0½-1½		1629.155	B	30	0.08	7.66	2½-2½	
2373.733	A	8	0.00	5.20	4½-4½		1636.334	B	30	0.11	7.65	1½-1½	
2388.629	A	9	0.05	5.21	3½-3½		1625.919	B	15	0.08	7.68	2½-3½	
*2399.237	A	9	0.08	5.23	2½-2½		1634.353	B	20	0.11	7.66	1½-2½	
2406.660	A	9	0.11	5.23	1½-1½		1639.403	B	30	0.12	7.65	0½-1½	
2411.062	A	9	0.12	5.24	0½-0½								
*2366.864	A	1	0.00	5.21	4½-3½								
2383.060	A	4	0.05	5.23	3½-2½								
2395.416	A	7	0.08	5.23	2½-1½								
2404.430	A	7	0.11	5.24	1½-0½								
2343.495	A	8	0.00	5.27	4½-3½	a °D - z °P° (3)	1260.542	B	20	0.00	9.79	4½-3½	a °D - z °P° (9)
2332.798	A	8	0.05	5.34	3½-2½		1267.437	B	25	0.05	9.79	3½-2½	
2327.391	A	7	0.08	5.39	2½-1½		1272.638	B	15	0.08	9.78	2½-1½	
2364.825	A	8	0.05	5.27	3½-3½		1266.694	B	20	0.05	9.79	3½-3½	
2348.300	A	8	0.08	5.34	2½-2½		1272.001	B	25b	0.08	9.79	2½-2½	
2338.005	A	8	0.11	5.39	1½-1½		1275.801	B	20	0.11	9.78	1½-1½	
2380.757	A	7	0.08	5.27	2½-3½		1271.235	B	1	0.08	9.79	2½-3½	
*2359.111	A	8	0.11	5.34	1½-2½		1275.154	B	15	0.11	9.79	1½-2½	
2344.278	A	8	0.12	5.39	0½-1½								
2260.078	A	1	0.00	5.46	4½-4½	a °D - z °F° (4)	1144.946	B	35hb	0.00	10.78	4½-5½	a °D - y °F° (10)
2253.119	A	1	0.05	5.52	3½-3½		1148.295	B	30	0.05	10.80	3½-4½	
2250.937	A	1	0.08	5.57	2½-2½		1151.163	B	25	0.08	10.81	2½-3½	
2250.171	A	0	0.11	5.59	1½-1½		1153.281	B	20	0.11	10.81	1½-2½	
2236.680	A	tr	0.05	5.57	3½-2½		1154.401	B	20	0.12	10.81	0½-1½	
2279.918	A	2	0.05	5.46	3½-4½		1143.235	B	25	0.00	10.80	4½-4½	
2267.584	A	1	0.08	5.52	2½-3½		1147.413	B	25	0.05	10.81	3½-3½	
2260.853	A	1	0.11	5.57	1½-2½		1150.689	B	20	0.08	10.81	2½-2½	
2255.979	A	0	0.12	5.59	0½-1½		1152.882	B	20	0.11	10.81	1½-1½	
							1153.955	B	15	0.12	10.82	0½-0½	
						*1142.334	B	25	0.00	10.81	4½-3½	a °D - 1° (11)	
						1146.963	B	15	0.05	10.81	3½-2½		
						1150.292	B	20	0.08	10.81	2½-1½		
						1152.440	B	15	0.11	10.82	1½-0½		
m2249.18	P	Fe II	0.00	5.49	4½-3½	a °D - z °D° (5)	1133.678	B	25	0.00	10.89	4½-3½	a °D - 2° (12)
2251.556	A	0	0.05	5.53	3½-2½		1138.642	B	25	0.05	10.89	3½-3½	
2254.401	A	0	0.11	5.58	1½-0½		*1142.334	B	25	0.08	10.89	2½-3½	
*2268.844	A	Od	0.05	5.49	3½-3½								
2265.991	A	0	0.08	5.53	2½-2½								
2262.686	A	1	0.11	5.56	1½-1½								
2260.228	A	1	0.12	5.58	0½-0½								
2268.562	A	0	0.12	5.56	0½-1½								

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1124.134	B	20	0.08	11.06	2½-1½	a ⁴ D - 4°	2732.441	A	2	0.23	4.75	4½-4½	a ⁴ F - z ⁴ D°
1126.603	B	20	0.11	11.06	1½-1½	(14)	2759.336	A	2	0.30	4.77	3½-3½	(32)
1128.074	B	25b	0.12	11.06	0½-1½		2775.339	A	1	0.35	4.80	2½-2½	
							*2717.533	A	0	0.23	4.77	4½-3½	
1106.362	B	5	0.00	11.16	4½-	a ⁴ D - 6°	2790.752	A	0	0.35	4.77	2½-3½	
1111.114	B	15	0.05	11.16	3½-	(15)	2797.037	A	0	0.38	4.80	1½-2½	
1112.086	B	35	0.12	11.22	0½-1½	a ⁴ D - 9°	2511.375	A	2	0.30	5.21	3½-3½	a ⁴ F - z ⁴ F°
						(16)	2531.082	A	1	0.35	5.23	2½-2½	(33)
1102.758	B	1	0.05	11.24	3½-2½	a ⁴ D - 11°	2505.217	A	2	0.30	5.23	3½-2½	
1106.215	B	15	0.08	11.24	2½-2½	(17)	2526.837	A	1	0.35	5.23	2½-1½	
							2542.316	A	1	0.38	5.24	1½-0½	
1096.886	B	30	0.00	11.25	4½-3½	a ⁴ D - w ⁴ P°	2451.106	A	2	0.23	5.27	4½-3½	a ⁴ F - z ⁴ P°
1096.616	B	20	0.05	11.30	3½-2½	(18)	2449.739	A	1	0.30	5.34	3½-2½	(34)
1096.793	B	20	0.08	11.34	2½-1½		2485.076	A	0	0.30	5.27	3½-3½	
1101.538	B	20	0.05	11.25	3½-3½								
1100.026	B	20	0.08	11.30	2½-2½		2359.999	A	8	0.23	5.46	4½-4½	a ⁴ F - z ⁴ F°
1099.117	B	25h	0.11	11.34	1½-1½		2362.014	A	6	0.30	5.52	3½-3½	(35)
1104.978	B	1	0.08	11.25	2½-3½		2366.591	A	5	0.35	5.57	2½-2½	
1102.385	B	8	0.11	11.30	1½-2½		2370.494	A	5	0.38	5.59	1½-1½	
1100.525	B	20	0.12	11.34	0½-1½		2331.308	A	7	0.23	5.52	4½-3½	
							2343.958	A	6	0.30	5.57	3½-2½	
1063.982	B	15	0.00	11.60	4½-3½	a ⁴ D - 13°	2354.884	A	5	0.35	5.59	2½-1½	
1068.356	B	30	0.05	11.60	3½-3½	(19)	2391.475	A	4	0.30	5.46	3½-4½	
1071.596	B	30	0.08	11.60	2½-3½		2384.999	A	3	0.35	5.52	2½-3½	
							2382.356	A	3	0.38	5.57	1½-2½	
1069.038	B	15	0.08	11.63	2½-2½	a ⁴ D - 14°							
1071.260	B	5	0.11	11.63	1½-2½	(20)	2348.118	A	8	0.23	5.49	4½-3½	a ⁴ F - z ⁴ D°
							2360.287	A	8	0.30	5.53	3½-2½	(36)
1055.269	B	25	0.00	11.70	4½-3½	a ⁴ D - 15°	2368.593	A	7	0.35	5.56	2½-1½	
1059.571	B	20	0.05	11.70	3½-3½	(21)	2375.192	A	7	0.38	5.58	1½-0½	
1062.758	B	20	0.08	11.70	2½-3½		2379.275	A	7	0.30	5.49	3½-3½	
							2383.242	A	7	0.35	5.53	2½-2½	
935.783	B	0	0.00	13.66	4½-3½	a ⁴ D - 16°	2384.386	A	7	0.38	5.56	1½-1½	
939.159	B	20	0.05	13.66	3½-3½	(22)	2402.597	A	3	0.35	5.49	2½-3½	
941.660	B	12	0.08	13.66	2½-3½		*2399.237	A	9	0.38	5.53	1½-2½	
936.484	B	8	0.05	13.67	3½-	a ⁴ D - 17°	Vac						
*938.967	B	10	0.08	13.67	2½-	(23)	1724.963	B	8	0.30	7.46	3½-2½	a ⁴ F - y ⁴ P°
							1709.560	B	0	0.35	7.57	2½-1½	(37)
926.900	B	25	0.00	13.68	4½-3½	a ⁴ D - 20°							
930.219	B	30	0.05	13.68	3½-3½	(24)	1702.045	B	25	0.23	7.48	4½-5½	a ⁴ F - z ⁴ G°
*932.687	B	30	0.08	13.68	2½-3½		1713.002	B	20	0.30	7.51	3½-4½	(38)
							1720.621	B	20	0.35	7.53	2½-3½	
926.220	B	60	0.00	13.68	4½-	a ⁴ D - 21°	1726.394	B	12	0.38	7.54	1½-2½	
929.538	B	30	0.05	13.68	3½-	(25)	1696.800	B	8	0.23	7.51	4½-4½	
							1708.627	B	8	0.30	7.53	3½-3½	
928.107	B	30	0.05	13.68	3½-2½	a ⁴ D - 22°	1718.123	B	2	0.35	7.54	2½-2½	
930.558	B	30	0.08	13.68	2½-2½	(26)	1706.179	B	1	0.30	7.54	3½-2½	
932.244	B	30	0.11	13.68	1½-2½								
930.030	B	30	0.08	13.68	2½-1½	a ⁴ D - 23°	1686.717	B	2	0.35	7.67	2½-1½?	a ⁴ F - z ⁴ D°
931.709	B	10	0.11	13.68	1½-1½	(27)	1716.569	B	2	0.35	7.54	2½-2½	(39)
*932.687	B	30	0.12	13.68	0½-1½		1724.847	B	8	0.38	7.54	1½-2½	
923.884	B	30	0.00	13.68	4½-3½	a ⁴ D - 24°	*1670.759	B	25	0.23	7.62	4½-3½	a ⁴ F - y ⁴ D°
927.176	B	30	0.05	13.68	3½-3½	(28)	1659.487	B	20	0.30	7.74	3½-2½	(40)
929.612	B	30	0.08	13.68	2½-3½		1663.226	B	15	0.35	7.77	2½-1½	
							1674.716	B	10	0.38	7.76	1½-0½	
928.470	B	20	0.08	13.68	2½-1½	a ⁴ D - 25°	1686.457	B	8	0.30	7.62	3½-3½	
930.165	B	30	0.11	13.68	1½-1½	(29)	*1670.759	B	25	0.35	7.74	2½-2½	
931.142	B	25	0.12	13.68	0½-1½		1671.010	B	1	0.38	7.77	1½-1½	
							1698.190	B	0	0.35	7.62	2½-3½?	
924.970	B	15	0.08	13.69	2½-1½	a ⁴ D - 27°							
926.618	B	10	0.11	13.69	1½-1½	(30)	1658.785	B	15	0.23	7.67	4½-4½	a ⁴ F - y ⁴ F°
927.632	B	8	0.12	13.69	0½-1½		1676.871	B	1	0.30	7.66	3½-3½	(41)
							1685.953	B	5	0.35	7.67	2½-2½	
896.504	B	1	0.05	13.73	3½-2½	a ⁴ D - 29°	1691.289	B	8	0.38	7.68	1½-1½	
898.776	B	0	0.08	13.73	2½-2½	(31)	1674.258	B	2	0.30	7.67	3½-4½	
900.360	B	5	0.11	13.73	1½-2½		1693.961	B	0	0.38	7.67	1½-2½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1637.400	B	15	0.23	7.77	4½-3½	a 'F -z 'D°	2926.584	A	12	0.98	5.20	3½-4½	a 'D -z 'F°
1643.588	B	15	0.30	7.81	3½-2½	(42)	2953.774	A	11	1.04	5.21	2½-3½	(60)
1649.444	B	15b	0.35	7.83	2½-1½		2970.510	A	10	1.07	5.23	1½-2½	
1654.484	B	5	0.38	7.85	1½-0½		2979.349	A	8	1.09	5.23	0½-1½	
1652.489	B	0	0.30	7.77	3½-3½		2916.150	A	2	0.98	5.21	3½-3½	
1662.369	B	0	0.38	7.81	1½-2½		2945.262	A	2	1.04	5.23	2½-2½	
							2975.938	A	5	1.09	5.24	0½-0½	
1612.814	B	20	0.23	7.89	4½-5½	a 'F -y 'G°	2907.853	A	3	0.98	5.23	3½-2½	
1625.525	B	20	0.30	7.89	3½-4½	(43)	2939.506	A	5	1.04	5.23	2½-1½	
1633.907	B	15	0.35	7.91	2½-3½		2961.272	A	5	1.07	5.24	1½-0½	
1640.167	B	12	0.38	7.91	1½-2½								
1610.933	B	15h	0.23	7.89	4½-4½		2880.750	A	9	0.98	5.27	3½-3½	a 'D -z 'P°
1623.102	B	8	0.30	7.91	3½-3½		2868.874	A	5	1.04	5.34	2½-2½	(61)
1632.672	B	1	0.35	7.91	2½-2½		2861.187	A	3	1.07	5.39	1½-1½	
							2917.465	A	4	1.04	5.27	2½-3½	
1569.670	B	12	0.23	8.10	4½-5½	a 'F -z 'G°	2892.822	A	3	1.07	5.34	1½-2½	
1580.635	B	25b	0.30	8.11	3½-4½	(44)							
1584.954	B	15	0.35	8.14	2½-3½		2755.733	A	15	0.98	5.46	3½-4½	a 'D -z 'F°
1588.295	B	10	0.38	8.16	1½-2½		2749.324	A	14	1.04	5.52	2½-3½	(62)
1566.825	B	20	0.23	8.11	4½-4½		2746.487	A	14	1.07	5.57	1½-2½	
1574.778	B	0	0.30	8.14	3½-3½		2743.196	A	14	1.09	5.59	0½-1½	
1581.293	B	8	0.35	8.16	2½-2½		2716.683	A	2	0.98	5.52	3½-3½	
							2724.879	A	9	1.04	5.57	2½-2½	
1559.106	B	20	0.23	8.15	4½-4½	a 'F -z 'F°	2730.735	A	11	1.07	5.59	1½-1½	
1563.790	B	25	0.30	8.19	3½-3½	(45)	2692.826	A	5	0.98	5.57	3½-2½	
1570.248	B	20	0.35	8.21	2½-2½		2709.373	A	1	1.04	5.59	2½-1½	
1574.931	B	20	0.38	8.22	1½-1½								
1550.260	B	1	0.23	8.19	4½-3½		2739.545	A	15	0.98	5.49	3½-3½	a 'D -z 'D°
1568.031	B	8	0.35	8.22	2½-1½		2746.978	A	14	1.04	5.53	2½-2½	(63)
1572.750	B	1	0.30	8.15	3½-4½		2749.178	A	13	1.07	5.56	1½-1½	
1573.831	B	5	0.35	8.19	2½-3½		2749.482	A	12	1.09	5.58	0½-0½	
1577.158	B	1	0.38	8.21	1½-2½		2714.414	A	13	0.98	5.53	3½-2½	
							2727.538	A	13	1.04	5.56	2½-1½	
1558.543	B	10	0.35	8.27	2½-2½?	a 'F -y 'D°	2736.968	A	12	1.07	5.58	1½-0½	
1558.706	B	10	0.38	8.30	1½-1½?	(46)	2772.719	A	1	1.04	5.49	2½-3½	
							2768.940	A	8	1.07	5.53	1½-2½	
1412.834	B	12	0.23	8.97	4½-3½	a 'F -w 'D°	2761.813	A	9	1.09	5.56	0½-1½	
1424.747	B	12	0.30	8.96	3½-2½	(47)							
1424.047	B	8	0.30	8.97	3½-3½		2562.535	A	13	0.98	5.80	3½-2½	a 'D -z 'P°
							2563.472	A	12	1.04	5.85	2½-1½	(64)
1130.874	B	2	0.23	11.15	4½-3½	a 'F -5°	2566.908	A	9	1.07	5.88	1½-0½	
1138.039	B	5	0.30	11.15	3½-3½	(48)	2591.542	A	10	1.04	5.80	2½-2½	
							2582.582	A	10	1.07	5.85	1½-1½	
1129.777	B	12	0.23	11.16	4½-	a 'F -6°	2577.920	A	9	1.09	5.88	0½-0½	
							2611.075	A	6	1.07	5.80	1½-2½	
1128.180	B	5	0.30	11.24	3½-2½	a 'F -11°	2593.722	A	7	1.09	5.85	0½-1½	
1133.413	B	25	0.35	11.24	2½-2½	(50)							
1097.782	B	2	0.38	11.63	1½-2½	a 'F -14°	Vac						
							1859.744	B	15	0.98	7.62	3½-3½	a 'D -y 'D°
1076.556	B	2	0.23	11.70	4½-3½	a 'F -15°	1841.701	B	10h	1.04	7.74	2½-2½	(65)
							1842.256	B	0	1.07	7.77	1½-1½	
							1826.991	B	1	0.98	7.74	3½-2½	
							1874.931	B	0	1.04	7.62	2½-3½	
							1851.517	B	1	1.07	7.74	1½-2½	
952.470	B	10	0.23	13.66	4½-3½	a 'F -16°	1818.509	B	2	0.98	7.77	3½-3½	a 'D -z 'D°
							*1822.150	B	1	1.04	7.81	2½-2½	(66)
										1.07	7.85	1½-0½	
954.786	B	2	0.30	13.67	3½-	a 'F -17°	1833.071	B	0	1.04	7.77	2½-3½	
							1831.724	B	1	1.07	7.81	1½-2½	
943.267	B	12	0.23	13.68	4½-3½	a 'F -20°	1781.702	B	2	1.07	8.00	1½-0½	a 'D -z 'P°
													(67)
942.589	B	5	0.23	13.68	4½-	a 'F -21°	1635.389	B	35	0.98	8.53	3½-2½	a 'D -z 'P°
							1641.761	B	25	1.04	8.56	2½-1½	(68)
							1646.187	B	20	1.07	8.57	1½-0½	
							1647.161	B	25	1.04	8.53	2½-2½	
945.095	B	25	0.30	13.68	3½-3½	a 'F -24°	1649.583	B	20	1.07	8.56	1½-1½	
							1650.709	B	20	1.09	8.57	0½-0½	
*938.967	B	10	0.23	13.68	4½-3½	a 'F -26°	1655.042	B	1	1.07	8.53	1½-2½	
*943.910	B	15	0.30	13.68	3½-3½	(58)	1654.105	B	5	1.09	8.56	0½-1½	
*943.910	B	15	0.35	13.69	2½-1½	a 'F -27°	1413.707	B	25	0.98	9.71	3½-2½	a 'D -w 'D°
													(69)
							1214.409	B	10	0.98	11.15	3½-3½	a 'D -5°
							1220.882	B	5	1.04	11.15	2½-3½	(70)

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1213.149	B	20	0.98	11.16	3½—	a 'D — 6° (71)
1213.764	B	20	1.07	11.24	1½—2½	a 'D — 11° (72)
1159.347	B	20	0.98	11.63	3½—2½	a 'D — 14° (73)
1165.269	B	12	1.04	11.63	2½—2½	
1011.037	B	25	0.98	13.66	3½—3½	a 'D — 16° (74)
1015.520	B	20	1.04	13.66	2½—3½	
1007.975	B	25	0.98	13.67	3½—	a 'D — 17° (75)
1012.417	B	25	1.04	13.67	2½—	
1007.657	B	20	0.98	13.67	3½—2½	a 'D — 18° (76)
1012.088	B	20	1.04	13.67	2½—2½	
1015.083	B	10	1.07	13.67	1½—2½	
995.829	B	8	0.98	13.68	3½—3½	a 'D — 26° (77)
1000.183	B	2	1.04	13.68	2½—3½	
Air						
2984.831	A	15	1.66	5.80	2½—2½	a 'P — z 'P° (78)
2965.036	A	10	1.69	5.85	1½—1½	
2964.629	A	9	1.72	5.88	0½—0½	
2947.658	A	13	1.66	5.85	2½—1½	
2944.399	A	13	1.69	5.88	1½—0½	
3002.650	A	13	1.69	5.80	1½—2½	
2985.545	A	13	1.72	5.85	0½—1½	
*2164.339	B	20	1.66	7.37	2½—1½	a 'P — z 'S° (79)
2173.720	B	15	1.69	7.37	1½—1½	
2130.259	B	15	1.66	7.46	2½—2½	a 'P — y 'P°† (80)
*2097.512	B	25b	1.69	7.57	1½—1½	
2108.139	B	15	1.69	7.54	1½—2½	a 'P — z 'D° (81)
2073.147	B	8h	1.72	7.67	0½—1½	
2057.332	B	12	1.66	7.66	2½—3½	a 'P — y 'F°† (82)
2020.739	B	25	1.66	7.77	2½—3½	a 'P — x 'D° (83)
2015.500	B	20	1.69	7.81	1½—2½	
2017.090	B	15	1.72	7.83	0½—1½	
2007.452	B	15b	1.66	7.81	2½—2½	
2007.711	B	12	1.69	7.83	1½—1½	
2013.268	B	15	1.72	7.85	0½—0½	
2003.881	B	2	1.69	7.85	1½—0½	
Vac						
1709.678	B	15	1.66	8.88	2½—2½	a 'P — w 'P° (84)
1715.036	B	0	1.72	8.91	0½—0½	
1707.411	B	2	1.66	8.89	2½—1½	
1708.259	B	1	1.69	8.91	1½—0½	
1715.507	B	12	1.69	8.88	1½—2½	
1720.042	B	10	1.72	8.89	0½—1½	
1689.821	B	10b	1.66	8.97	2½—3½	a 'P — w 'D° (85)
1690.781	B	8	1.66	8.96	2½—2½	
1699.199	B	2	1.69	8.95	1½—1½	
m1708.68	P	Fe II	1.72	8.94	0½—0½	
1693.477	B	0	1.66	8.95	2½—1½	
1701.952	B	2	1.69	8.94	1½—0½	
1296.088	B	20	1.69	11.21	1½—	a 'P — 8° (86)
1299.984	B	0	1.72	11.21	0½—	
1291.594	B	15	1.66	11.22	2½—1½	a 'P — 9° (87)
1294.914	B	12	1.69	11.22	1½—1½	
1298.815	B	2	1.72	11.22	0½—1½	

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1290.204	B	15	1.66	11.23	2½—1½	a 'P — 10°† (88)
Air						
2158.518	B	25	1.96	7.67	4½—4½	a 'G — y 'F° (89)
2187.678	B	10	2.02	7.66	3½—3½	
2183.301	B	12	2.02	7.67	3½—4½?	
2162.023	B	20	1.96	7.66	4½—4½	a 'G — z 'G° (90)
2175.445	B	25	2.02	7.69	3½—3½	
2078.164	B	8	1.96	7.89	4½—4½	a 'G — y 'G° (91)
2096.990	B	0b	2.02	7.91	3½—3½	
2074.195	B	8b	1.96	7.91	4½—3½	
2094.985	B	2	2.02	7.91	3½—2½	
2063.672	B	25hb	1.96	7.94	4½—3½	a 'G — z 'F°† (92)
2080.246	B	20	2.02	7.95	3½—2½	
2040.687	B	25	1.96	8.00	4½—4½	a 'G — y 'G° (93)
2051.028	B	25	2.02	8.04	3½—3½	
2029.182	B	8	1.96	8.04	4½—3½	
2018.772	B	25	1.96	8.07	4½—5½	a 'G — z 'H°† (94)
2032.407	B	25	2.02	8.09	3½—4½	
Vac						
1993.289	B	8b	1.96	8.15	4½—4½	a 'G — x 'F° (95)
1935.296	B	15	1.96	8.33	4½—5½	a 'G — y 'H° (96)
1936.781	B	20b	2.02	8.39	3½—4½	
1917.337	B	15b	1.96	8.39	4½—4½	
1860.040	B	20	1.96	8.59	4½—3½	a 'G — y 'P° (97)
1876.835	B	15	2.02	8.60	3½—2½	
1835.869	B	15	1.96	8.68	4½—4½	a 'G — x 'G° (98)
1846.581	B	12	2.02	8.71	3½—3½	
1772.518	B	15	1.96	8.92	4½—5½	a 'G — x 'H°† (99)
1793.371	B	10	2.02	8.90	3½—4½	
1760.415	B	20	1.96	8.97	4½—4½?	a 'G — w 'F° (100)
1769.667	B	1	1.96	8.93	4½—3½	
1746.816	B	20	1.96	9.02	4½—4½	a 'G — w 'G° (101)
1761.379	B	25	2.02	9.03	3½—3½	
1673.470	B	15	1.96	9.33	4½—3½	a 'G — w 'F° (102)
1679.388	B	15	2.02	9.37	3½—2½	
1364.590	B	12	1.96	11.00	4½—3½	a 'G — 2° (103)
Air						
2342.238	A	2	2.27	7.54	1½—2½	a 'P — z 'G° (104)
2339.408	A	2	2.27	7.54	1½—2½	a 'P — z 'D° (105)
2312.028	A	1	2.33	7.67	0½—1½	
2284.224	A	0n	2.27	7.67	1½—1½	
2151.095	B	25	2.27	8.00	1½—1½	a 'P — z 'P° (106)
2177.025	B	10	2.33	8.00	0½—0½	
2152.373	B	12	2.27	8.00	1½—0½	
2075.683	B	5	2.27	8.21	1½—2½	a 'P — x 'F° (107)
2094.641	B	1	2.33	8.22	0½—1½	
*2071.821	B	10	2.27	8.22	1½—1½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2544.972	A	6	2.69	7.54	1½-2½	b 4P - z 1D°	2469.373	A	1	2.66	7.66	4½-3½	a 4H - y 1F°
2517.124	A	6	2.77	7.67	0½-1½	(147)	2472.075	A	2	2.68	7.67	3½-2½	(162)
2444.515	A	8	2.57	7.62	2½-3½	b 4P - y 1D°	*2463.726	A	2	2.66	7.67	4½-4½	
2445.569	A	7	2.69	7.74	1½-2½	(148)	2477.342	A	4	2.68	7.66	3½-3½	
2465.194	A	7	2.77	7.77	0½-1½		2471.674	A	0	2.68	7.67	3½-4½	
2388.230	A	2	2.57	7.74	2½-2½		*2459.097	A	2	2.65	7.66	5½-4½	a 4H - z 1G°
2429.382	A	3	2.69	7.77	1½-1½		2453.794	A	3	2.66	7.69	4½-3½	(163)
2473.314	A	6	2.77	7.76	0½-0½		*2468.292	A	4	2.66	7.66	4½-4½	
2372.777	A	0	2.57	7.77	2½-1½		2461.667	A	2	2.68	7.69	3½-3½	
2424.380	A	3	2.57	7.66	2½-3½	b 4P - y 1F°	2476.264	A	3	2.68	7.66	3½-4½	
2478.206	A	2	2.69	7.67	1½-2½	(149)	2435.816	A	1	2.62	7.69	6½-6½	a 4H - z 1I°
2409.377	A	1	2.57	7.69	2½-3½	b 4P - z 1G°	2414.080	A	1	2.62	7.74	6½-5½	(164)
2152.488	B	25	2.57	8.30	2½-1½	b 4P - y 1D°	2446.462	A	5	2.65	7.69	5½-6½	
Vac							2433.495	A	4	2.66	7.74	4½-5½	
1362.771	B	20	2.57	11.63	2½-2½	b 4P - 14°	2345.327	A	5	2.62	7.89	6½-5½	a 4H - y 1G°
1381.250	B	10h	2.69	11.63	1½-2½	(152)	2351.198	A	5	2.65	7.89	5½-4½	(165)
*1162.351	B	2	2.57	13.66	2½-3½	b 4P - 16°	2354.473	A	5	2.66	7.91	4½-3½	
1171.606	B	8	2.69	13.67	1½-	(153)	*2359.111	A	8	2.68	7.91	3½-2½	
1148.693	B	8	2.57	13.68	2½-3½	b 4P - 17°	2355.218	A	3	2.65	7.89	5½-5½	
1144.052	B	5	2.57	13.68	2½-3½	(154)	2359.594	A	3	2.66	7.89	4½-4½	
1155.273	B	2	2.69	13.68	1½-1½	b 4P - 20°	*2361.728	A	3	2.68	7.91	3½-3½	
							2363.641	A	1	2.66	7.89	4½-5½	
							*2366.864	A	1	2.68	7.89	3½-4½	
							2340.939	A	1	2.66	7.94	4½-3½	a 4H - z 1F°
							2340.459	A	2	2.68	7.95	3½-2½	(166)
							2303.349	A	1	2.65	8.00	5½-4½	a 4H - y 1G°
							2296.662	A	0	2.66	8.04	4½-3½	(167)
							2213.679	B	20	2.62	8.20	6½-6½	a 4H - y 1H°
							2219.889	B	20	2.65	8.20	5½-5½	(168)
							2221.160	A	1	2.66	8.22	4½-4½	
							2223.481	A	1	2.68	8.23	3½-3½	
							*2211.112	B	5	2.62	8.20	6½-5½	
							m2213.72	P	Fe II	2.65	8.22	5½-4½	
							2217.048	A	0	2.66	8.23	4½-3½	
							2222.446	A	tr	2.65	8.20	5½-6½	
							2227.407	A	0n	2.66	8.20	4½-5½	
							2227.597	A	0	2.68	8.22	3½-4½	
							Vac						
							*1958.121	B	5	2.66	8.97	4½-4½?	a 4H - w 1F°
							*1963.110	B	25b	2.68	8.97	3½-4½?	(169)
							*1958.121	B	5	2.66	8.97	4½-3½?	a 4H - w 1D°
							1964.330	B	12	2.68	8.96	3½-2½?	(170)
							*1963.110	B	25b	2.68	8.97	3½-3½?	
							Air						
							2631.607	A	8	2.79	7.48	4½-5½	b 4F - z 1G°
							*2631.045	A	13	2.82	7.51	3½-4½	(171)
							2629.590	A	8	2.83	7.53	2½-3½	
							2630.068	A	8	2.84	7.54	1½-2½	
							2619.071	A	7	2.79	7.51	4½-4½	
							2620.693	A	7	2.82	7.53	3½-3½	
							2623.721	A	5	2.83	7.54	2½-2½	
							2608.852	A	3	2.79	7.53	4½-3½	
							2614.867	A	2	2.82	7.54	3½-2½	
							2613.576	A	2	2.79	7.52	4½-5½	b 4F - z 1H°
							2595.285	A	2	2.79	7.55	4½-3½	(172)
							2611.339	A	1	2.82	7.54	3½-2½	b 4F - z 1D°
							2620.175	A	4	2.83	7.54	2½-2½	(173)
							2626.499	A	6	2.84	7.54	1½-2½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2566.623	A	4	2.79	7.60	4½-5½	b 4F - z 1°	2165.555	B	10	2.83	8.53	2½-2½	b 4F - x 1P°
2583.047	A	2	2.82	7.59	3½-4½	(174)	2160.471	B	2	2.84	8.56	1½-1½	(185)
2571.542	A	2	2.79	7.59	4½-4½								
							Vac						
2557.500	A	4	2.79	7.62	4½-3½	b 4F - y 1D°	*1999.430	B	10	2.79	8.97	4½-4½	b 4F - w 1F°
2506.797	A	2h	2.82	7.74	3½-2½	(175)	Air						(186)
*2497.817	A	7	2.83	7.77	2½-1½		2017.855	B	2	2.82	8.93	3½-3½	
2511.910	A	2	2.84	7.76	1½-0½?		2027.778	B	5	2.83	8.92	2½-2½	
*2568.879	A	3	2.82	7.62	3½-3½		2034.461	B	1	2.84	8.91	1½-1½	
*2514.912	A	3	2.83	7.74	2½-2½								
*2503.560	A	5	2.84	7.77	1½-1½		Vac						
2577.431	A	1	2.83	7.62	2½-3½		*1999.430	B	10	2.79	8.97	4½-3½	b 4F - w D°
2520.749	A	0	2.84	7.74	1½-2½		Air						(187)
							2007.013	B	12	2.82	8.96	3½-2½	
2528.676	A	tr	2.79	7.68	4½-3½	b 4F - y 1P°	2016.092	B	10	2.83	8.95	2½-1½	
2547.740	A	tr	2.82	7.66	3½-2½	(176)	2023.715	B	1	2.84	8.94	1½-0½	
2539.797	A	2	2.82	7.68	3½-3½								
2548.166	A	0	2.83	7.68	2½-3½		Vac						
							1938.899	B	8b	2.84	9.21	1½-2½?	b 4F - x 1D°
*2529.545	A	10	2.79	7.67	4½-4½	b 4F - y 1F°							(188)
2546.667	A	8	2.82	7.66	3½-3½	(177)							
2549.453	A	8	2.83	7.67	2½-2½		*1476.054	B	10	2.79	11.16	4½-	b 4F - 6°
2549.399	A	8	2.84	7.68	1½-1½								(189)
2535.480	A	7	2.79	7.66	4½-3½								
2541.096	A	7	2.82	7.67	3½-2½								
2543.431	A	5	2.83	7.68	2½-1½		Air						
*2540.669	A	6	2.82	7.67	3½-4½		2572.965	A	3	2.88	7.68	2½-3½	a 4S - y 1P°
2555.066	A	5	2.83	7.66	2½-3½		2581.111	A	2	2.88	7.66	2½-2½	(190)
2555.447	A	5	2.84	7.67	1½-2½		Vac						
							1785.262	B	40	2.88	9.79	2½-3½	a 4S - x 1P°
*2530.103	A	6	2.82	7.69	3½-3½	b 4F - z 2G°	1786.738	B	40	2.88	9.79	2½-2½	(191)
2545.513	A	1	2.82	7.66	3½-4½	(178)	1787.997	B	35	2.88	9.78	2½-1½	
2538.393	A	1	2.83	7.69	2½-3½								
							*1476.054	B	10	2.88	11.24	2½-2½	a 4S - 11°
2480.155	A	8	2.79	7.77	4½-3½	b 4F - x 1D°							(192)
2470.661	A	7	2.82	7.81	3½-2½	(179)							
2466.811	A	7	2.83	7.83	2½-1½		1473.834	B	20	2.88	11.25	2½-3½	a 4S - w 1P°
2466.670	A	7	2.84	7.85	1½-0½		1465.043	B	20	2.88	11.30	2½-2½	(193)
2490.856	A	6	2.82	7.77	3½-3½		1495.311	B	15	2.88	11.34	2½-1½	
2478.568	A	6	2.83	7.81	2½-2½								
2472.426	A	5	2.84	7.83	1½-1½		1128.530	B	10h	2.88	13.73	2½-2½	a 4S - 29°
													(194)
2424.141	A	8	2.79	7.89	4½-5½	b 4F - y 1G°	Air						
2430.073	A	7	2.82	7.89	3½-4½	(180)	2840.342	A	7	3.14	7.48	5½-5½	a 4G - z 1G°
2432.259	A	7	2.83	7.91	2½-3½		2856.144	A	7	3.19	7.51	4½-4½	(195)
2434.942	A	7	2.84	7.91	1½-2½		*2858.340	A	11	3.21	7.53	3½-3½	
2419.892	A	1	2.79	7.89	4½-4½		2857.415	A	4	3.22	7.54	2½-2½	
*2424.585	A	3	2.82	7.91	3½-3½		2825.747	A	3	3.14	7.51	5½-4½	
2429.497	A	2	2.83	7.91	2½-2½		2851.430	A	1	3.21	7.54	3½-2½	
							2871.059	A	6	3.19	7.48	4½-5½	
2400.274	A	2	2.79	7.94	4½-3½	b 4F - z 1F°	2870.608	A	3	3.21	7.51	3½-4½	
2402.255	A	2	2.82	7.95	3½-2½	(181)	2864.367	A	2	3.22	7.53	2½-3½	
*2410.286	A	1n	2.82	7.94	3½-3½								
2415.068	A	3	2.84	7.95	1½-2½		2849.601	A	7	3.19	7.52	4½-5½	a 4G - z 1H°
							2855.676	A	9	3.21	7.53	3½-4½	(196)
2369.232	A	1	2.79	8.00	4½-4½	b 4F - y 2G°	2848.046	A	8	3.22	7.55	2½-3½	
2379.003	A	2	2.82	8.00	3½-4½	(182)	2819.327	A	3	3.14	7.52	5½-5½	
							2841.354	A	2	3.19	7.53	4½-4½	
2327.953	A	1	2.79	8.10	4½-5½	b 4F - x 1G°	2842.076	A	3	3.21	7.55	3½-3½	
2331.076	A	1n	2.82	8.11	3½-4½	(183)	2811.269	A	3	3.14	7.53	5½-4½	
2325.296	A	1	2.83	8.14	2½-3½								
2322.326	A	1	2.84	8.16	1½-2½		2847.208	A	4	3.21	7.54	3½-2½	a 4G - z 1D°
2321.687	A	1	2.79	8.11	4½-4½		2771.553	A	3	3.22	7.67	2½-1½	(197)
2318.343	A	1	2.82	8.14	3½-3½		2853.199	A	2	3.22	7.54	2½-2½	
2317.377	A	0	2.83	8.16	2½-2½								
*2304.736	A	1	2.79	8.15	4½-4½	b 4F - x 1F°	2769.354	A	9	3.14	7.60	5½-6½	a 4G - z 1I°
2294.603	A	1	2.82	8.19	3½-3½	(184)	2793.887	A	7	3.19	7.60	4½-5½	(198)
2293.765	A	1	2.83	8.21	2½-2½		2813.613	A	5	3.21	7.59	3½-4½	
2285.525	A	tr	2.79	8.19	4½-3½		2764.787	A	3	3.14	7.60	5½-5½	
2313.962	A	0	2.82	8.15	3½-4½		2799.712	A	2	3.19	7.59	4½-4½	
2301.424	A	0	2.83	8.19	2½-3½		*2770.507	A	5	3.14	7.59	5½-4½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2721. 813	A	4	3. 14	7. 67	5½-4½	a 'G -y 'F°	2396. 714	A	3	3. 19	8. 33	4½-5½	a 'G -y 'H°
2757. 029	A	5	3. 19	7. 66	4½-3½	(199)	2379. 155	A	2	3. 21	8. 39	3½-4½	(211)
2763. 913	A	3	3. 21	7. 67	3½-2½								
2762. 436	A	4	3. 22	7. 68	2½-1½		*2134. 592	B	2	3. 14	8. 92	5½-5½	a 'G -x 'H°
2750. 003	A	2	3. 19	7. 67	4½-4½		2140. 612	B	1	3. 14	8. 90	5½-4½	(212)
*2770. 507	A	5	3. 21	7. 66	3½-3½		2166. 198	B	20	3. 21	8. 90	3½-4½?	
2769. 566	A	1	3. 22	7. 67	2½-2½								
2776. 180	A	4	3. 22	7. 66	2½-3½		2116. 960	B	25b	3. 14	8. 97	5½-4½	a 'G -w 'F°
							2147. 719	B	15	3. 19	8. 93	4½-3½	(213)
2727. 382	A	8	3. 14	7. 66	5½-4½	a 'G -z 'G°	*2161. 161	B	15b	3. 21	8. 92	3½-2½	
*2737. 630§	A	4	3. 19	7. 69	4½-3½	(200)	2167. 880	B	12	3. 22	8. 91	2½-1½	
*2750. 896§	A	3?	3. 21	7. 69	3½-3½		2133. 990	B	8b	3. 19	8. 97	4½-4½	
2769. 153	A	6	3. 21	7. 66	3½-4½		2155. 839	B	12	3. 21	8. 93	3½-3½	
2756. 504	A	5	3. 22	7. 69	2½-3½		*2164. 558	B	25	3. 22	8. 92	2½-2½	
2711. 842	A	9	3. 14	7. 69	5½-6½	a 'G -z 'I°							
2712. 386	A	6	3. 19	7. 74	4½-5½	(201)	2951. 095	A	2	3. 18	7. 37	1½-1½	b 'P -z 'S°
2684. 940	A	3	3. 14	7. 74	5½-5½								(214)
2691. 732	A	4	3. 19	7. 77	4½-3½	a 'G -x 'D°	2888. 089	A	5	3. 18	7. 46	1½-2½	b 'P -y 'P°
2680. 784	A	1	3. 21	7. 81	3½-2½	(202)	2906. 120	A	4	3. 32	7. 57	0½-1½	(215)
2672. 310	A	0	3. 22	7. 83	2½-1½		2812. 493	A	3	3. 18	7. 57	1½-1½	
2704. 569	A	1	3. 21	7. 77	3½-3½		2931. 479	A	1	3. 32	7. 53	0½-0½	
2686. 100	A	1	3. 22	7. 81	2½-2½								
							2835. 716	A	9	3. 18	7. 54	1½-2½	b 'P -z 'G°
2626. 695	A	1	3. 21	7. 91	3½-3½	a 'G -y 'G°							(216)
2628. 569	A	2	3. 22	7. 91	2½-2½	(203)							
							2831. 562	A	11	3. 18	7. 54	1½-2½	b 'P -z 'D°
2600. 415	A	1	3. 21	7. 95	3½-2½	a 'G -z 'F°	2840. 644	A	9	3. 32	7. 67	0½-1½	(217)
2609. 859	A	4	3. 21	7. 94	3½-3½	(204)	2751. 121	A	6	3. 18	7. 67	1½-1½	
2605. 416	A	6	3. 22	7. 95	2½-2½								
							2709. 051	A	7	3. 18	7. 74	1½-2½	b 'P -y 'D°
2561. 584	A	1	3. 19	8. 00	4½-4½	a 'G -y 'G°	2774. 686	A	7	3. 32	7. 77	0½-1½	(218)
2554. 950	A	1	3. 21	8. 04	3½-3½	(205)							
2573. 206	A	4	3. 21	8. 00	3½-4½		2852. 864	A	2	3. 32	7. 65	0½-1½	b 'P -y 'P°
2559. 774	A	5	3. 22	8. 04	2½-3½		2762. 566	A	0	3. 18	7. 65	1½-1½?	(219)
2503. 323	A	7	3. 14	8. 07	5½-5½	a 'G -z 'H°	2736. 500	A	1	3. 32	7. 83	0½-1½	b 'P -z 'D°
*2514. 912	A	3	3. 19	8. 09	4½-4½	(206)	2729. 427	A	1h	3. 32	7. 85	0½-0½	(220)
							2646. 692	A	0	3. 18	7. 85	1½-0½	
2489. 826	A	8	3. 14	8. 10	5½-5½	a 'G -x 'G°							
2506. 091	A	7	3. 19	8. 11	4½-4½	(207)	2560. 278	A	7	3. 18	8. 00	1½-1½	b 'P -z 'P°
2502. 388	A	7	3. 21	8. 14	3½-3½		2639. 560	A	5	3. 32	8. 00	0½-0½	(221)
*2497. 817	A	7	3. 22	8. 16	2½-2½		2562. 094	A	6	3. 18	8. 00	1½-0½	
2482. 654	A	8	3. 14	8. 11	5½-4½		2637. 643	A	6	3. 32	8. 00	0½-1½	
2491. 392	A	6	3. 19	8. 14	4½-3½								
*2493. 174	A	12	3. 21	8. 16	3½-2½		2454. 158	A	2	3. 18	8. 21	1½-2½	b 'P -x 'F°
2513. 372	A	1	3. 19	8. 10	4½-5½		2519. 404	A	2	3. 32	8. 22	0½-1½	(222)
2517. 211	A	2	3. 21	8. 11	3½-4½		2448. 731	A	1	3. 18	8. 22	1½-1½	
2507. 014	A	2	3. 22	8. 14	2½-3½								
							2470. 752	A	4	3. 18	8. 18	1½-0½	b 'P -z 'S°
2463. 280	A	6	3. 14	8. 15	5½-4½	a 'G -x 'F°	2542. 733	A	5	3. 32	8. 18	0½-0½	(223)
2464. 007	A	7	3. 19	8. 19	4½-3½	(208)							
2465. 911	A	7	3. 21	8. 21	3½-2½		2425. 677	A	3	3. 18	8. 27	1½-2½	b 'P -y 'D°
2464. 903	A	7	3. 22	8. 22	2½-1½		2478. 115	A	3	3. 32	8. 30	0½-1½	(224)
2486. 343	A	7	3. 19	8. 15	4½-4½		2409. 708	A	1	3. 18	8. 30	1½-1½	
2474. 762	A	6	3. 21	8. 19	3½-3½								
2470. 406	A	4	3. 22	8. 21	2½-2½		2207. 780	B	0	3. 32	8. 91	0½-0½	b 'P -w 'P°
2497. 300	A	1	3. 21	8. 15	3½-4½		2153. 281	B	5	3. 18	8. 91	1½-0½	(225)
2479. 276	A	0	3. 22	8. 19	2½-3½								
							*2134. 592	B	2	3. 18	8. 96	1½-2½	b 'P -w 'D°
2439. 301	A	8	3. 14	8. 20	5½-6½	a 'G -y 'H°	2192. 674	B	5	3. 32	8. 95	0½-1½	(226)
2458. 782	A	8	3. 19	8. 20	4½-5½	(209)	2197. 273	B	5h	3. 32	8. 94	0½-0½	
2461. 855	A	8	3. 21	8. 22	3½-4½								
2461. 282	A	8	3. 22	8. 23	2½-3½		2108. 942	B	25	3. 18	9. 04	1½-1½	b 'P -y 'P°
2436. 222	A	2	3. 14	8. 20	5½-5½		*2161. 313	B	20b	3. 32	9. 03	0½-0½	(227)
2451. 208	A	3	3. 19	8. 22	4½-4½		*2109. 097	B	10	3. 18	9. 03	1½-0½	
2456. 816	A	2	3. 21	8. 23	3½-3½		*2161. 161	B	15b	3. 32	9. 04	0½-1½	
2446. 203	A	tr	3. 19	8. 23	4½-3½								
							Vac						
2437. 157	A	3	3. 21	8. 27	3½-2½	a 'G -y 'D°	1994. 857	B	20	3. 18	9. 37	1½-2½?	b 'P -w 'F°
2425. 362	A	2	3. 22	8. 30	2½-1½	(210)							(228)
2441. 548	A	1	3. 22	8. 27	2½-2½								

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2886.234	A	3	3.23	7.51	5½-4½	b ²H - z ⁴G°	2150.762	B	10	3.23	8.97	5½-4½	b ²H - w ⁴F°
2888.988	A	1	3.25	7.53	4½-3½	(229)	2173.220	B	20b	3.25	8.93	4½-3½?	(248)
2916.933	A	2	3.25	7.48	4½-5½		2130.548	B	12	3.23	9.02	5½-4½	b ²H - w ¹G°
2883.709	A	10	3.23	7.51	5½-6½	b ²H - z ⁴H°	2136.519	B	20	3.25	9.03	4½-3½	(249)
2894.776	A	7	3.25	7.52	4½-5½	(230)	2107.555	B	10	3.23	9.09	5½-5½	b ²H - w ²H°
2879.543	A	2	3.23	7.52	5½-5½		*2109.097	B	10	3.25	9.10	4½-4½	(250)
2871.125	A	6	3.23	7.53	5½-4½		2100.963	B	5h	3.23	9.10	5½-4½	
2872.382	A	9	3.25	7.55	4½-3½								
2827.431	A	5	3.23	7.60	5½-6½	b ²H - z ¹I°	3021.407	A	1	3.37	7.46	3½-2½	a ²F - y ⁴P°
2837.300	A	5	3.25	7.60	4½-5½	(231)	2965.395	A	2	3.41	7.57	2½-1½	(251)
2822.668	A	1	3.23	7.60	5½-5½		2998.855	A	2	3.41	7.53	2½-3½	a ²F - z ⁴G°
2843.323	A	4	3.25	7.59	4½-4½		2971.616	A	1	3.37	7.53	3½-3½	(252)
2828.622	A	6	3.23	7.59	5½-4½		2991.244	A	0	3.41	7.54	2½-2½	
2791.001	A	2	3.25	7.68	4½-3½	b ²H - y ⁴P°	2964.131	A	7	3.37	7.54	3½-2½	
						(232)	2968.738	A	2	3.37	7.53	3½-4½	a ²F - z ⁴H°
2777.892	A	5	3.23	7.67	5½-4½	b ²H - y ⁴F°	2980.963	A	4	3.41	7.55	2½-3½	(253)
2799.292	A	7	3.25	7.66	4½-3½	(233)	2954.050	A	4	3.37	7.55	3½-3½	
2792.050	A	1	3.25	7.67	4½-4½		2959.601	A	7	3.37	7.54	3½-2½	a ²F - z ²D°
2783.690	A	12	3.23	7.66	5½-4½	b ²H - z ²G°	2897.264	A	8	3.41	7.67	2½-1½	(254)
2779.302	A	11	3.25	7.69	4½-3½	(234)	2986.617	A	4	3.41	7.54	2½-2½	
2797.914	A	5	3.25	7.66	4½-4½		2905.185	A	1	3.37	7.62	3½-3½	a ²F - y ⁴D°
*2767.500	A	13	3.23	7.69	5½-6½	b ²H - z ²I°	2850.641	A	0	3.41	7.74	2½-2½	(255)
2753.289	A	12	3.25	7.74	4½-5½	(235)	2826.024	A	4	3.37	7.74	3½-2½	
2732.004	A	4	3.25	7.77	4½-3½	b ²H - x ¹D°	2828.681	A	5	3.41	7.77	2½-1½	
						(236)	2868.046	A	0	3.37	7.68	3½-3½	a ²F - y ⁴P°
2651.297	A	1	3.23	7.89	5½-5½	b ²H - y ⁴G°	2909.968	A	1	3.41	7.65	2½-1½	(256)
2659.054	A	0	3.25	7.89	4½-4½	(237)	2869.156	A	4	3.37	7.67	3½-4½	a ²F - y ⁴F°
2646.206	A	1	2.23	7.89	5½-4½		2902.317	A	3	3.41	7.66	2½-3½	(257)
2652.557	A	3	3.25	7.91	4½-3½		2876.804	A	7	3.37	7.66	3½-3½	
2664.209	A	2	3.25	7.89	4½-5½		2895.071	A	3	3.41	7.67	2½-2½	
*2635.401	A	2	3.25	7.94	4½-3½	b ²H - z ²F°	2869.694	A	2	3.37	7.67	3½-2½	
						(238)	2887.312	A	3	3.41	7.68	2½-1½	
m2585.76	P	Fe II	3.23	8.00	5½-4½	b ²H - y ²G°	2875.342	A	8	3.37	7.66	3½-4½	a ²F - z ²G°
*2579.406	A	3	3.25	8.04	4½-3½	(239)	2880.828	A	8	3.41	7.69	2½-3½	(258)
2598.028	A	2	3.25	8.00	4½-4½		2805.786	A	4	3.37	7.77	3½-3½	a ²F - x ¹D°
2550.680	A	8	3.23	8.07	5½-5½	b ²H - z ²H°	2804.021	A	3	3.41	7.81	2½-2½	(259)
2550.023	A	8	3.25	8.09	4½-4½	(240)	2780.178	A	tr	3.37	7.81	3½-2½	
2536.673	A	7	3.23	8.10	5½-5½	b ²H - x ⁴G°	2830.061	A	0	3.41	7.77	2½-3½	
2529.221	A	5	3.23	8.11	5½-4½	(241)	2728.898	A	5	3.37	7.89	3½-4½	a ²F - y ⁴G°
2525.858	A	3	3.25	8.14	4½-3½		2744.890	A	3	3.41	7.91	2½-3½	(260)
2509.117	A	4	3.23	8.15	5½-4½	b ²H - x ⁴F°	2722.060	A	5	3.37	7.91	3½-3½	
*2497.709	A	3	3.25	8.19	4½-3½	(242)	2741.395	A	6	3.41	7.91	2½-2½	
2520.669	A	2	3.25	8.15	4½-4½		2703.988	A	10	3.37	7.94	3½-3½	a ²F - z ²F°
2484.243	A	5	3.23	8.20	5½-6½	b ²H - y ⁴H°	2716.216	A	9	3.41	7.95	2½-2½	(261)
2492.341	A	4	3.25	8.20	4½-5½	(243)	2693.852	A	3	3.37	7.95	3½-2½	
2481.044	A	3	3.23	8.20	5½-5½		2726.509	A	3	3.41	7.94	2½-3½	
2484.553	A	1	3.25	8.22	4½-4½		2686.388	A	1	3.41	8.00	2½-1½	a ²F - z ²P°
2417.859	A	6	3.23	8.33	5½-5½	b ²H - y ²H°	2664.665	A	10	3.37	8.00	3½-4½	a ²F - y ²G°
2400.338	A	4	3.25	8.39	4½-4½	(244)	2666.631	A	10	3.41	8.04	2½-3½	(263)
2389.870	A	1	3.23	8.39	5½-4½		*2645.084	A	3	3.37	8.04	3½-3½	
2311.224	A	1	3.25	8.59	4½-3½	b ²H - y ²F°	2614.177	A	2	3.37	8.09	3½-4½	a ²F - z ²H°
						(245)						(264)	
2264.589	A	1	3.23	8.68	5½-4½	b ²H - x ²G°	2604.655	A	1	3.37	8.11	3½-4½	a ²F - x ⁴G°
2263.224	A	1	3.25	8.71	4½-3½	(246)	2609.431	A	2	3.41	8.14	2½-3½	(265)
2168.925	B	8	3.23	8.92	5½-5½	b ²H - x ²H°	2588.786	A	3	3.37	8.14	3½-3½	
2183.803	B	10h	3.25	8.90	4½-4½	(247)	2578.985	A	1	3.37	8.16	3½-2½	

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2583.343	A	0	3.37	8.15	$3\frac{1}{2}-4\frac{1}{2}$	$a^2F - x^4F^{\circ}$
*2579.406	A	3	3.41	8.19	$2\frac{1}{2}-3\frac{1}{2}$	(266)
2559.237	A	3	3.37	8.19	$3\frac{1}{2}-3\frac{1}{2}$	
*2569.775	A	4	3.41	8.21	$2\frac{1}{2}-2\frac{1}{2}$	
2549.774	A	3	3.37	8.21	$3\frac{1}{2}-2\frac{1}{2}$	
2563.834	A	4	3.41	8.22	$2\frac{1}{2}-1\frac{1}{2}$	
2545.432	A	3	3.37	8.22	$3\frac{1}{2}-4\frac{1}{2}$	$a^2F - y^4H^{\circ}$
2559.921	A	5	3.41	8.23	$2\frac{1}{2}-3\frac{1}{2}$	(267)
2540.053	A	0	3.37	8.23	$3\frac{1}{2}-3\frac{1}{2}$	
2519.044	A	7	3.37	8.27	$3\frac{1}{2}-2\frac{1}{2}$	$a^2F - y^2D^{\circ}$
2521.089	A	7	3.41	8.30	$2\frac{1}{2}-1\frac{1}{2}$	(268)
2538.577	A	2	3.41	8.27	$2\frac{1}{2}-2\frac{1}{2}$	
2457.104	A	0	3.37	8.39	$3\frac{1}{2}-4\frac{1}{2}$	$a^2F - y^2H^{\circ}$
						(269)
2363.811	A	3	3.37	8.59	$3\frac{1}{2}-3\frac{1}{2}$	$a^2F - y^2F^{\circ}$
*2378.526	A	2	3.41	8.60	$2\frac{1}{2}-2\frac{1}{2}$	(270)
2361.371	A	On	3.37	8.60	$3\frac{1}{2}-2\frac{1}{2}$	
2187.444	B	12	3.37	9.01	$3\frac{1}{2}-3\frac{1}{2}$	$a^2F - x^2F^{\circ}$
2185.622	B	8h	3.37	9.02	$3\frac{1}{2}-2\frac{1}{2}$	(271)
2132.537	B	2	3.41	9.20	$2\frac{1}{2}-1\frac{1}{2}$	$a^2F - x^2D^{\circ}$
						(272)
2070.330	B	8	3.37	9.33	$3\frac{1}{2}-3\frac{1}{2}$	$a^2F - w^2F^{\circ}$
2069.952	B	10b	3.41	9.37	$2\frac{1}{2}-2\frac{1}{2}$	(273)
2083.512	B	0b	3.41	9.33	$2\frac{1}{2}-3\frac{1}{2}$	
Vac						
1642.187	B	5	3.37	10.89	$3\frac{1}{2}-3\frac{1}{2}$	$a^2F - 1^{\circ}$
						(274)
1233.660	B	8	3.37	13.68	$3\frac{1}{2}-3\frac{1}{2}$	$a^2F - 26^{\circ}$
						(275)
Air						
3012.59	P		3.80	7.89	$3\frac{1}{2}-4\frac{1}{2}$	$b^2G - y^4G^{\circ}$
2978.850	A	2	3.75	7.89	$4\frac{1}{2}-4\frac{1}{2}$	(276)
3004.249	A	2	3.80	7.91	$3\frac{1}{2}-3\frac{1}{2}$	
2970.682	A	5	3.75	7.91	$4\frac{1}{2}-3\frac{1}{2}$	
3000.059	A	5	3.80	7.91	$3\frac{1}{2}-2\frac{1}{2}$	
2949.178	A	10	3.75	7.94	$4\frac{1}{2}-3\frac{1}{2}$	$b^2G - z^2F^{\circ}$
2969.934	A	8	3.80	7.95	$3\frac{1}{2}-2\frac{1}{2}$	(277)
2982.239	A	3	3.80	7.94	$3\frac{1}{2}-3\frac{1}{2}$	
2902.459	A	5	3.75	8.00	$4\frac{1}{2}-4\frac{1}{2}$	$b^2G - y^2G^{\circ}$
2910.761	A	3	3.80	8.04	$3\frac{1}{2}-3\frac{1}{2}$	(278)
2879.241	A	4	3.75	8.04	$4\frac{1}{2}-3\frac{1}{2}$	
2934.488	A	3	3.80	8.00	$3\frac{1}{2}-4\frac{1}{2}$	
*2858.340	A	11	3.75	8.07	$4\frac{1}{2}-5\frac{1}{2}$	$b^2G - z^2H^{\circ}$
2873.399	A	10	3.80	8.09	$3\frac{1}{2}-4\frac{1}{2}$	(279)
2842.677	A	1	3.75	8.09	$4\frac{1}{2}-4\frac{1}{2}$	
2840.756	A	8	3.75	8.10	$4\frac{1}{2}-5\frac{1}{2}$	$b^2G - x^4G^{\circ}$
2861.903	A	1	3.80	8.11	$3\frac{1}{2}-4\frac{1}{2}$	(280)
2812.667	A	0	3.75	8.14	$4\frac{1}{2}-3\frac{1}{2}$	
2830.939	A	1	3.80	8.16	$3\frac{1}{2}-2\frac{1}{2}$	
*2807.165	A	1	3.80	8.19	$3\frac{1}{2}-3\frac{1}{2}$	$b^2G - x^4F^{\circ}$
2777.840	A	1	3.75	8.19	$4\frac{1}{2}-3\frac{1}{2}$	(281)
2795.760	A	1	3.80	8.21	$3\frac{1}{2}-2\frac{1}{2}$	

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2771.184	A	5	3.75	8.20	$4\frac{1}{2}-5\frac{1}{2}$	$b^2G - y^4H^{\circ}$
2790.557	A	3	3.80	8.22	$3\frac{1}{2}-4\frac{1}{2}$	(282)
2692.601	A	10	3.75	8.33	$4\frac{1}{2}-5\frac{1}{2}$	$b^2G - y^2H^{\circ}$
2684.752	A	10	3.80	8.39	$3\frac{1}{2}-4\frac{1}{2}$	(283)
2657.917	A	2	3.75	8.39	$4\frac{1}{2}-4\frac{1}{2}$	
2549.082	A	7	3.75	8.59	$4\frac{1}{2}-3\frac{1}{2}$	$b^2G - y^2F^{\circ}$
2570.843	A	7	3.80	8.60	$3\frac{1}{2}-2\frac{1}{2}$	(284)
2573.754	A	1	3.80	8.59	$3\frac{1}{2}-3\frac{1}{2}$	
2503.870	A	7	3.75	8.68	$4\frac{1}{2}-4\frac{1}{2}$	$b^2G - x^2G^{\circ}$
2514.383	A	7	3.80	8.71	$3\frac{1}{2}-3\frac{1}{2}$	(285)
2387.424	A	2	3.75	8.92	$4\frac{1}{2}-5\frac{1}{2}$	$b^2G - x^2H^{\circ}$
2416.705	A	1	3.80	8.90	$3\frac{1}{2}-4\frac{1}{2}$	(286)
2345.177	A	0	3.75	9.01	$4\frac{1}{2}-3\frac{1}{2}$	$b^2G - x^2F^{\circ}$
2366.040	A	0h	3.80	9.01	$3\frac{1}{2}-3\frac{1}{2}$	(287)
2313.300	A	1	3.75	9.09	$4\frac{1}{2}-5\frac{1}{2}$	$b^2G - w^2H^{\circ}$
2325.577	A	1	3.80	9.10	$3\frac{1}{2}-4\frac{1}{2}$	(288)
*2211.112	B	5	3.75	9.33	$4\frac{1}{2}-3\frac{1}{2}$	$b^2G - w^2F^{\circ}$
						(289)
2093.683	B	35	3.75	9.65	$4\frac{1}{2}-3\frac{1}{2}$	$b^2G - v^2F^{\circ}$
2127.967	B	10	3.80	9.60	$3\frac{1}{2}-2\frac{1}{2}$	(290)
2110.240	B	25	3.80	9.65	$3\frac{1}{2}-3\frac{1}{2}$	
2989.367	A	tr	3.87	8.00	$1\frac{1}{2}-0\frac{1}{2}$	$b^4D - z^2P^{\circ}$
2986.91	P		3.87	8.00	$1\frac{1}{2}-1\frac{1}{2}$	(291)
2989.731	A	0	3.87	8.00	$0\frac{1}{2}-0\frac{1}{2}$	
2997.749	A	tr d	3.89	8.00	$3\frac{1}{2}-4\frac{1}{2}$	$b^4D - y^2G^{\circ}$
						(292)
2922.023	A	5	3.89	8.11	$3\frac{1}{2}-4\frac{1}{2}$	$b^4D - x^4G^{\circ}$
2894.058	A	2	3.87	8.14	$2\frac{1}{2}-3\frac{1}{2}$	(293)
2879.849	A	0	3.87	8.16	$1\frac{1}{2}-2\frac{1}{2}$	
2902.056	A	1	3.89	8.14	$3\frac{1}{2}-3\frac{1}{2}$	
2881.801	A	0	3.87	8.16	$2\frac{1}{2}-2\frac{1}{2}$	
2895.215	A	7	3.89	8.15	$3\frac{1}{2}-4\frac{1}{2}$	$b^4D - x^4F^{\circ}$
2857.171	A	7	3.87	8.19	$2\frac{1}{2}-3\frac{1}{2}$	(294)
2843.485	A	5	3.87	8.21	$1\frac{1}{2}-2\frac{1}{2}$	
2836.509	A	4	3.87	8.22	$0\frac{1}{2}-1\frac{1}{2}$	
2864.968	A	4	3.89	8.19	$3\frac{1}{2}-3\frac{1}{2}$	
2845.392	A	4	3.87	8.21	$2\frac{1}{2}-2\frac{1}{2}$	
2836.185	A	4	3.87	8.22	$1\frac{1}{2}-1\frac{1}{2}$	
2853.119	A	1	3.89	8.21	$3\frac{1}{2}-2\frac{1}{2}$	
2785.800	A	tr	3.87	8.30	$2\frac{1}{2}-1\frac{1}{2}$	$b^4D - y^2D^{\circ}$
*2807.165	A	1	3.87	8.27	$2\frac{1}{2}-2\frac{1}{2}$	(295)
2783.959	A	2	3.87	8.30	$1\frac{1}{2}-1\frac{1}{2}$	
2805.315	A	3	3.87	8.27	$1\frac{1}{2}-2\frac{1}{2}$	
2784.282	A	2	3.87	8.30	$0\frac{1}{2}-1\frac{1}{2}$	
2635.127	A	tr	3.87	8.56	$1\frac{1}{2}-1\frac{1}{2}$	$b^4D - x^2P^{\circ}$
*2635.401	A	2	3.87	8.56	$0\frac{1}{2}-1\frac{1}{2}$	(296)
2615.729	A	0	3.87	8.59	$2\frac{1}{2}-3\frac{1}{2}$	$b^4D - y^2F^{\circ}$
						(297)
2554.435	A	0	3.87	8.71	$2\frac{1}{2}-3\frac{1}{2}$	$b^4D - x^2G^{\circ}$
						(298)
2469.512	A	6	3.89	8.88	$3\frac{1}{2}-2\frac{1}{2}$	$b^4D - w^2P^{\circ}$
2458.964	A	5	3.87	8.89	$2\frac{1}{2}-1\frac{1}{2}$	(299)
2447.320	A	3	3.87	8.91	$1\frac{1}{2}-0\frac{1}{2}$	
2447.560	A	1h	3.87	8.91	$0\frac{1}{2}-0\frac{1}{2}$	
2457.785	A	0	3.87	8.89	$0\frac{1}{2}-1\frac{1}{2}$	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2428.367	A	6	3.89	8.97	3½-4½	b ¹D - w ¹F°	2885.929	A	5	4.06	8.33	6½-5½	a ¹I - y ¹H°
2440.416	A	4	3.87	8.93	2½-3½	(300)	2848.899	A	5	4.06	8.39	5½-4½	(317)
2445.787	A	4	3.87	8.92	1½-2½		2888.736	A	Od	4.06	8.33	5½-5½	
2450.196	A	4	3.87	8.91	0½-1½		2592.781	A	9	4.06	8.82	6½-7½	a ¹I - z ¹K°
2446.103	A	4	3.89	8.93	3½-3½		2625.489	A	9	4.06	8.76	5½-6½	(318)
2447.203	A	3	3.87	8.92	2½-2½		2623.129	A	4	4.06	8.76	6½-6½	
2449.961	A	4	3.87	8.91	1½-1½		2538.205	A	6	4.06	8.92	6½-5½	a ¹I - x ¹H°
2452.916	A	1	3.89	8.92	3½-2½		2548.925	A	5	4.06	8.90	5½-4½	(319)
*2451.354	A	1	3.87	8.91	2½-1½		2454.574	A	6	4.06	9.09	6½-5½	a ¹I - w ¹H°
2428.286	A	4	3.89	8.97	3½-3½	b ¹D - w ¹D°	2447.753	A	6	4.06	9.10	5½-4½	(320)
*2424.585	A	3	3.87	8.96	2½-2½	(301)	2456.641	A	2	4.06	9.09	5½-5½	
2428.795	A	3	3.87	8.95	1½-1½		2432.867	A	7	4.06	9.13	6½-6½	a ¹I - y ¹I°
2434.645	A	3	3.87	8.94	0½-0½		2434.733	A	7	4.06	9.13	5½-5½	(321)
*2430.184	A	2	3.89	8.96	3½-2½		2432.701	A	1	4.06	9.13	6½-5½	
2434.398	A	0	3.87	8.94	1½-0½		2984.273	A	tr	4.14	8.27	3½-2½	c ²G - y ²D°
2422.688	A	4	3.87	8.97	2½-3½		2936.022	A	2	4.13	8.33	4½-5½	c ²G - y ²H°
2423.204	A	4	3.87	8.96	1½-2½		2897.744	A	2	4.14	8.39	3½-4½	(323)
2429.034	A	3	3.87	8.95	0½-1½		2766.200	A	1	4.13	8.59	4½-3½	c ²G - y ¹F°
2406.982	A	3	3.89	9.01	3½-3½	b ¹D - x ¹F°	2765.493	A	1	4.14	8.60	3½-2½	(324)
2394.172	A	0	3.87	9.03	2½-3½	b ¹D - w ¹G°	2768.848	A	0h?	4.14	8.59	3½-3½	
2399.636	A	0	3.89	9.03	3½-3½	(303)	2712.989	A	1	4.13	8.68	4½-4½?	c ²G - x ²G°
2390.311	A	0	3.87	9.03	1½-0½	b ¹D - y ¹P°	2697.726	A	2	4.13	8.71	4½-3½	(325)
2390.546	A	0	3.87	9.03	0½-0½	(304)	2715.609	A	0	4.14	8.68	3½-4½	
2211.243	B	12	3.87	9.45	0½-0½	b ¹D - x ¹P°	2576.859	A	7	4.13	8.92	4½-5½	c ²G - x ²H°
						(305)	2587.945	A	7	4.14	8.90	3½-4½	(326)
*2979.096	A	3	3.95	8.09	3½-4½	b ²F - z ²H°	2585.629	A	5	4.13	8.90	4½-4½	
2946.173	A	0	3.95	8.14	3½-3½	b ²F - x ²G°	2580.717	A	0	4.14	8.92	3½-2½	c ²G - w ¹F°
2933.466	A	0	3.95	8.16	3½-2½	(307)	2551.201	A	4	4.13	8.97	4½-3½	c ²G - w ¹D°
2892.215	A	0 Fe 1?	3.93	8.19	2½-3½	b ²F - x ¹F°	2527.694	A	5	4.13	9.01	4½-3½	c ²G - x ¹F°
2880.136	A	0	3.93	8.21	2½-2½	(308)	2529.929	A	1	4.14	9.01	3½-3½	(329)
2658.251	A	4	3.95	8.59	3½-3½	b ²F - y ¹F°	2521.810	A	7	4.14	9.03	3½-3½	c ²G - w ²G°
2642.015	A	4	3.93	8.60	2½-2½	(309)	2525.114	A	4	4.14	9.02	3½-4½	(330)
*2645.084	A	3	3.93	8.59	2½-3½		2490.728	A	4	4.13	9.09	4½-5½	c ²G - w ²H°
2609.122	A	5	3.95	8.68	3½-4½	b ²F - x ²G°	2483.721	A	3	4.14	9.10	3½-4½	(331)
2582.422	A	3	3.93	8.71	2½-3½	(310)	*2481.576	A	2	4.13	9.10	4½-4½	
2594.964	A	2	3.95	8.71	3½-3½		2468.194	A	1	4.13	9.13	4½-5½	c ²G - y ¹I°
2477.117	A	tr	3.93	8.91	2½-1½	b ²F - w ¹F°	2372.631	A	3	4.13	9.33	4½-3½	c ²G - w ¹F°
						(311)	*2357.005	A	3n	4.14	9.37	3½-2½	(333)
*2459.097	A	2	3.95	8.97	3½-3½?	b ²F - w ¹D°	2237.894	A	0	4.13	9.65	4½-3½	c ²G - y ¹F°
						(312)	2239.638	A	tr	4.14	9.65	3½-3½	(334)
2437.256	A	3	3.95	9.01	3½-3½	b ²F - x ¹F°	2997.298	A	7	4.48	8.59	2½-3½	b ²D - y ¹F°
2423.919	A	1	3.93	9.02	2½-2½	(313)	2982.059	A	8	4.46	8.60	1½-2½	(335)
*2346.271	A	1	3.95	9.21	3½-2½	b ²F - x ¹D°	2993.366	A	1h	4.48	8.60	2½-2½	
2341.953	A	1	3.93	9.20	2½-1½	(314)	2917.087	A	4	4.48	8.71	2½-3½	b ²D - x ²G°
2292.770	A	0	3.95	9.33	3½-3½	b ²F - w ¹F°							
2266.699	A	0	3.93	9.37	2½-2½	(315)	2783.410	A	1h	4.46	8.89	1½-1½	b ²D - w ¹P°
2276.378	A	tr	3.95	9.37	3½-2½		2793.239	A	2	4.48	8.89	2½-1½	(337)
Vac							2770.303	A	1	4.46	8.91	1½-0½	
1602.588	B	12	3.93	11.63	2½-2½	b ²F - 14°							
						(316)							

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2768.334	A	1	4.46	8.92	1½-2½	b ²D - w ²F°
2773.678	A	1h	4.46	8.91	1½-1½	(338)
2719.296	A	5	4.48	9.01	2½-3½	b ²D - x ²F°
2707.128	A	6	4.46	9.02	1½-2½	(339)
*2716.429§	A	3	4.48	9.02	2½-2½	
2709.937	A	0	4.48	9.03	2½-3½?	b ²D - w ²G°
						(340)
*2706.566§	A	7	4.48	9.04	2½-1½	b ²D - y ²P°
2697.453	A	5	4.46	9.03	1½-0½	(341)
2697.330	A	4	4.46	9.04	1½-1½	
2606.514	A	7	4.48	9.21	2½-2½	b ²D - x ²D°
2605.307	A	6	4.46	9.20	1½-1½	(342)
2597.943	A	2	4.46	9.21	1½-2½	
*2540.669	A	6	4.48	9.33	2½-3½	b ²D - w ²F°
2512.513	A	5	4.46	9.37	1½-2½	(343)
2520.535	A	0	4.48	9.37	2½-2½	
2340.352	A	1	4.46	9.73	1½-0½	b ²D - w ²P°
						(344)
Vac						
1875.536	B	15	4.46	11.04	1½-2½	b ²D - 3°
						(345)
1725.402	B	5	4.48	11.63	2½-2½	b ²D - 14°
						(346)
Air						
2832.270	A	0	4.60	8.95	0½-1½	a ²S - w ²D°
						(347)
2779.906	A	4	4.60	9.04	0½-1½	a ²S - y ²P°
2780.035	A	3	4.60	9.03	0½-0½	(348)
*2569.775	A	4	4.60	9.40	0½-1½	a ²S - x ²P°
2540.531	A	2	4.60	9.45	0½-0½	(349)
Vac						
1397.581	B	12	4.60	13.69	0½-1½	a ²S - 27°
						(350)
Air						
2924.160	A	1	4.71	8.93	2½-3½	c ²D - w ²F°
						(351)
2898.738	A	1	4.71	8.97	2½-3½	c ²D - w ²D°
						(352)
*2868.446§	A	4	4.71	9.01	2½-3½	c ²D - x ²F°
						(353)
2858.519	A	3	4.72	9.03	1½-0½	c ²D - y ²P°
						(354)
2670.384	A	2	4.71	9.33	2½-3½	c ²D - w ²F°
*2651.691§	A	3?	4.72	9.37	1½-2½	(355)
2648.159	A	tr	4.71	9.37	2½-2½	
2633.200	A	5	4.71	9.40	2½-1½	c ²D - x ²P°
2605.895	A	3	4.72	9.45	1½-0½	(356)
2636.687	A	1	4.72	9.40	1½-1½	
2500.919	A	5	4.71	9.65	2½-3½	c ²D - v ²F°
2529.078	A	5	4.72	9.60	1½-2½	(357)
2482.320	A	3	4.72	9.69	1½-1½	c ²D - w ²D°
2479.225	A	1	4.71	9.69	2½-1½	(358)
2469.823	A	2	4.72	9.71	1½-2½	

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2433.571	A	1	4.71	9.78	2½-1½	c ²D - w ²P°
2460.644	A	2	4.72	9.73	1½-0½	(359)
2436.413	A	0	4.72	9.78	1½-1½	c ²D - x ²P°
						(360)
2022.776	B	1	4.72	10.82	1½-0½	c ²D - y ²F°
						(361)
Vac						
1900.667	B	0	4.72	11.21	1½	c ²D - 8°
						(362)
Air						
2537.142	A	5	4.75	9.61	4½-4½	z ²D° - e ²D
2525.933	A	2	4.77	9.66	3½-3½	(363)
2520.267	A	1h	4.80	9.69	2½-2½	
2515.925	A	0	4.83	9.73	0½-0½	
2513.155	A	2h	4.75	9.66	4½-3½	
2507.695	A	2h	4.77	9.69	3½-2½	
2507.607	A	2h	4.80	9.72	2½-1½	
2509.875	A	1h	4.82	9.73	1½-0½	
2550.155	A	2	4.77	9.61	3½-4½	
2538.681	A	2	4.80	9.66	2½-3½	
*2530.103	A	6	4.82	9.69	1½-2½	
2523.451	A	1h	4.83	9.72	0½-1½	
2419.485	A	0	4.80	9.90	2½-1½	z ²D° - e ²D
2418.702	A	1	4.82	9.92	1½-0½	(364)
2251.831	B	80	4.75	10.23	4½-5½	z ²D° - e ²F
2255.691	A	50	4.77	10.24	3½-4½	(365)
2257.788	A	25	4.80	10.26	2½-3½	
2256.897	A	10	4.82	10.28	1½-2½	
2254.066	B	8	4.83	10.30	0½-1½	
2245.505	A	45	4.75	10.24	4½-4½	
2247.692	A	35	4.77	10.26	3½-3½	
*2249.063	A	30	4.80	10.28	2½-2½	
2249.181	A	25	4.82	10.30	1½-1½	
*2249.063	A	30	4.83	10.32	0½-0½	
2237.577	A	20	4.75	10.26	4½-3½	
2239.047	A	25	4.77	10.28	3½-2½	
2241.426	A	20	4.80	10.30	2½-1½	
2244.216	A	8	4.82	10.32	1½-0½	
2209.049	B	20	4.75	10.33	4½-3½	z ²D° - 30
2228.761	B	30	4.80	10.33	2½-3½	(366)
2208.419	B	30	4.75	10.34	4½-3½	z ²D° - e ²P
2191.935	B	10	4.77	10.40	3½-2½	(367)
2198.660	B	4	4.80	10.41	2½-1½	
2218.289	B	30	4.77	10.34	3½-3½	
2201.595	B	5	4.80	10.40	2½-2½	
2206.153	B	8	4.82	10.41	1½-1½	
2214.059	B	20	4.77	10.35	3½-2½	z ²D° - 32
2223.866	B	2	4.80	10.35	2½-2½	(368)
2231.512	B	10	4.82	10.35	1½-2½	
2215.094	B	10	4.80	10.37	2½-1½	z ²D° - 33
2222.679	B	1	4.82	10.37	1½-1½	(369)
2227.469	B	4	4.83	10.37	0½-1½	
2180.870	B	12	4.75	10.41	4½-5½	z ²D° - e ²G
2180.255	B	12	4.80	10.46	2½-3½	(370)
2181.137	B	8	4.82	10.47	1½-2½	
2181.407	B	5b	4.83	10.49	0½-1½	
2169.950	B	12	4.75	10.43	4½-4½	
2176.826	B	20	4.82	10.49	1½-1½	
*2161.313	B	20b	4.75	10.46	4½-3½	
*2164.558	B	25	4.77	10.47	3½-2½	
2169.431	B	10	4.80	10.49	2½-1½?	
2215.728	B	4	4.82	10.39	1½-	z ²D° - 34
2220.453	B	6	4.83	10.39	0½-	(371)

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2991.817	A	2h	5.49	9.61	$3\frac{1}{2}-4\frac{1}{2}$	$z^4D^{\circ}-e^4D$
2958.528	A	1h	5.49	9.66	$3\frac{1}{2}-3\frac{1}{2}$	(398)
2962.936	A	1h	5.53	9.69	$2\frac{1}{2}-2\frac{1}{2}$	
2968.119	A	0	5.56	9.72	$1\frac{1}{2}-1\frac{1}{2}$	
2972.016	A	0	5.58	9.73	$0\frac{1}{2}-0\frac{1}{2}$	
2856.928	A	8h	5.49	9.81	$3\frac{1}{2}-3\frac{1}{2}$	$z^4D^{\circ}-e^4D$
2848.122	A	7h	5.53	9.86	$2\frac{1}{2}-2\frac{1}{2}$	(399)
2845.450	A	4	5.56	9.90	$1\frac{1}{2}-1\frac{1}{2}$	
2844.973	A	3h	5.58	9.92	$0\frac{1}{2}-0\frac{1}{2}$	
2824.589	A	1h	5.53	9.90	$2\frac{1}{2}-1\frac{1}{2}$	
2831.883	A	1v	5.56	9.92	$1\frac{1}{2}-0\frac{1}{2}$	
2884.779	A	4h	5.53	9.81	$2\frac{1}{2}-3\frac{1}{2}$	
2858.639	A	3h	5.58	9.90	$0\frac{1}{2}-1\frac{1}{2}$	
2484.442	A	3h	5.49	10.45	$3\frac{1}{2}-3\frac{1}{2}$	$z^4D^{\circ}-f^4D$
2493.880	A	2	5.53	10.48	$2\frac{1}{2}-2\frac{1}{2}$	(400)
2501.351	A	0	5.58	10.51	$0\frac{1}{2}-0\frac{1}{2}$	
2473.037	A	1	5.49	10.48	$3\frac{1}{2}-2\frac{1}{2}$	
2482.869	A	1	5.53	10.50	$2\frac{1}{2}-1\frac{1}{2}$	
2510.121	A	1h	5.56	10.48	$1\frac{1}{2}-2\frac{1}{2}$	
2453.973	A	2h	5.49	10.52	$3\frac{1}{2}-4\frac{1}{2}$	$z^4D^{\circ}-e^4G$
2460.171	A	1h	5.56	10.58	$1\frac{1}{2}-2\frac{1}{2}$	(401)
2398.664	A	2h	5.49	10.63	$3\frac{1}{2}-4\frac{1}{2}$	$z^4D^{\circ}-e^4F$
2401.301	A	2h	5.53	10.67	$2\frac{1}{2}-3\frac{1}{2}$	(402)
2405.688	A	2h	5.56	10.69	$1\frac{1}{2}-2\frac{1}{2}$	
2408.653	A	2h	5.58	10.70	$0\frac{1}{2}-1\frac{1}{2}$	
2390.766	A	1h	5.53	10.69	$2\frac{1}{2}-2\frac{1}{2}$	
*2959.841	A	4	5.54	9.71	$3\frac{1}{2}-2\frac{1}{2}$	$c^2F-w^2D^{\circ}$
*2979.096	A	3	5.55	9.69	$2\frac{1}{2}-1\frac{1}{2}$	(403)
2961.119	A	tr	5.55	9.71	$2\frac{1}{2}-2\frac{1}{2}$	
2566.218	A	5	5.54	10.35	$3\frac{1}{2}-4\frac{1}{2}$	$c^2F-v^2G^{\circ}$
2605.034	A	6	5.55	10.28	$2\frac{1}{2}-3\frac{1}{2}$	(404)
2604.048	A	1	5.54	10.28	$3\frac{1}{2}-3\frac{1}{2}$	
2566.397	A	4	5.54	10.35	$3\frac{1}{2}-2\frac{1}{2}$	$c^2F-v^2D^{\circ}$
2535.364	A	3	5.55	10.41	$2\frac{1}{2}-1\frac{1}{2}$	(405)
2203.420	B	1	5.55	11.15	$2\frac{1}{2}-3\frac{1}{2}$	c^2F-5°
						(406)
2763.979	A	2	5.80	10.26	$2\frac{1}{2}-3\frac{1}{2}?$	$z^4P^{\circ}-e^4F$
						(407)
2680.244	A	1h	5.80	10.40	$2\frac{1}{2}-2\frac{1}{2}$	$z^4P^{\circ}-e^4P$
						(408)
2648.704	A	0	5.80	10.46	$2\frac{1}{2}-3\frac{1}{2}$	$z^4P^{\circ}-e^4G$
						(409)
2650.492	A	4h	5.80	10.45	$2\frac{1}{2}-3\frac{1}{2}$	$z^4P^{\circ}-f^4D$
2667.221	A	3h	5.85	10.48	$1\frac{1}{2}-2\frac{1}{2}$	(410)
2671.404	A	2h	5.88	10.50	$0\frac{1}{2}-1\frac{1}{2}$	
2637.515	A	2h	5.80	10.48	$2\frac{1}{2}-2\frac{1}{2}$	
2654.639	A	2h	5.85	10.50	$1\frac{1}{2}-1\frac{1}{2}$	
2662.563	A	2h	5.88	10.51	$0\frac{1}{2}-0\frac{1}{2}$	
2625.202	A	0	5.80	10.50	$2\frac{1}{2}-1\frac{1}{2}$	
2645.911	A	0h	5.85	10.51	$1\frac{1}{2}-0\frac{1}{2}$	
2790.177	A	0	5.93	10.35	$2\frac{1}{2}-2\frac{1}{2}$	$d^2D-v^2D^{\circ}$
						(411)
2570.527	A	5	5.93	10.73	$2\frac{1}{2}-3\frac{1}{2}$	$d^2D-v^2D^{\circ}$
						(412)

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2403.967	A	tr	5.93	11.06	$2\frac{1}{2}-1\frac{1}{2}$	d^2D-4°
						(413)
2332.503	A	tr	5.93	11.22	$2\frac{1}{2}-1\frac{1}{2}?$	d^2D-9°
						(414)
2303.840	A	0	5.88	11.24	$1\frac{1}{2}-2\frac{1}{2}$	d^2D-11°
						(415)
2722.740	A	4	6.20	10.73	$2\frac{1}{2}-3\frac{1}{2}$	$c^4P-v^4D^{\circ}$
2682.989	A	3	6.11	10.71	$1\frac{1}{2}-2\frac{1}{2}$	(416)
2669.932	A	2	6.06	10.68	$0\frac{1}{2}-1\frac{1}{2}$	
2734.803	A	2	6.20	10.71	$2\frac{1}{2}-2\frac{1}{2}$	
2699.185	A	2	6.11	10.68	$1\frac{1}{2}-1\frac{1}{2}$	
*2681.038	A	2	6.06	10.66	$0\frac{1}{2}-0\frac{1}{2}$	
2718.639	A	5	6.19	10.73	$4\frac{1}{2}-3\frac{1}{2}$	$c^4F-v^4D^{\circ}$
2732.936	A	3	6.20	10.71	$3\frac{1}{2}-2\frac{1}{2}$	(417)
2753.034	A	2	6.18	10.66	$1\frac{1}{2}-0\frac{1}{2}$	
2729.569	A	1	6.19	10.71	$2\frac{1}{2}-2\frac{1}{2}$	
2741.325	A	0	6.18	10.68	$1\frac{1}{2}-1\frac{1}{2}$	
*2717.533	A	1	6.19	10.73	$2\frac{1}{2}-3\frac{1}{2}$	
2752.092	A	3h	6.19	10.68	$4\frac{1}{2}-3\frac{1}{2}$	$c^4F-u^2F^{\circ}$
2741.045	A	2	6.18	10.68	$1\frac{1}{2}-2\frac{1}{2}$	(418)
2565.306	A	0	6.19	11.00	$4\frac{1}{2}-3\frac{1}{2}$	c^4F-2°
2567.326	A	0	6.20	11.00	$3\frac{1}{2}-3\frac{1}{2}$	(419)
Vac						
1732.253	B	15	6.19	13.68	$4\frac{1}{2}-3\frac{1}{2}$	c^4F-20°
						(420)
Air						
2645.191	A	2	6.78	11.44	$1\frac{1}{2}-2\frac{1}{2}$	$c^2P-u^2D^{\circ}$
						(421)
2998.662	A	tr	6.77	10.89	$2\frac{1}{2}-3\frac{1}{2}?$	d^2F-1°
						(422)
2824.401	A	tr	6.78	11.15	$3\frac{1}{2}-3\frac{1}{2}$	d^2F-5°
						(423)
2764.465	A	0	6.78	11.24	$3\frac{1}{2}-2\frac{1}{2}$	d^2F-11°
						(424)
2682.510	A	3	6.78	11.38	$3\frac{1}{2}-4\frac{1}{2}$	$d^2F-v^4F^{\circ}$
						(425)
2645.328	A	3	6.78	11.44	$3\frac{1}{2}-2\frac{1}{2}$	$d^2F-u^2D^{\circ}$
2676.881	A	2	6.77	11.38	$2\frac{1}{2}-1\frac{1}{2}$	(426)
2642.982	A	0	6.77	11.44	$2\frac{1}{2}-2\frac{1}{2}$	
2664.259	A	3	6.78	11.41	$3\frac{1}{2}-4\frac{1}{2}$	$d^2F-u^2G^{\circ}$
2649.467	A	4	6.77	11.43	$2\frac{1}{2}-3\frac{1}{2}$	(427)
2651.826	A	0	6.78	11.43	$3\frac{1}{2}-3\frac{1}{2}$	
2665.563	A	1h	7.48	12.11	$5\frac{1}{2}-6\frac{1}{2}$	$z^4G^{\circ}-e^4H$
2663.961	A	0h	7.54	12.17	$2\frac{1}{2}-3\frac{1}{2}$	(428)

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2680. 723	A	2	7. 51	12. 11	6½—6½	<i>z</i> 'H° — <i>e</i> 'H	2918. 541	A	2h	7. 89	12. 11	5½—6½	<i>y</i> 'G° — <i>e</i> 'H
2672. 506	A	2h	7. 52	12. 13	5½—5½	(429)	2910. 724	A	2h	7. 89	12. 13	4½—5½	(435)
2669. 023	A	1h	7. 53	12. 15	4½—4½		2905. 770	A	2h	7. 91	12. 15	3½—4½	
2672. 152	A	1h	7. 55	12. 17	3½—3½		2899. 284	A	1h	7. 91	12. 17	2½—3½	
2668. 938	A	1h	7. 51	12. 13	6½—5½		2904. 574	A	0h	7. 89	12. 13	5½—5½	
2661. 789	A	0h	7. 52	12. 15	5½—4½		2897. 983	A	1	7. 89	12. 15	4½—4½	
2660. 256	A	0h	7. 53	12. 17	4½—3½		2895. 331	A	0h	7. 91	12. 17	3½—3½	
2684. 354	A	tr	7. 52	12. 11	5½—6½		2800. 548	A	2h	7. 89	12. 29	5½—4½	<i>y</i> 'G° — <i>f</i> 'F
2679. 799	A	0	7. 53	12. 13	4½—5½		2797. 215	A	2h	7. 89	12. 31	4½—3½	(436)
*2681. 038	A	2	7. 55	12. 15	3½—4½		2790. 065	A	1	7. 91	12. 33	2½—1½	
2667. 635	A	tr	7. 54	12. 17	2½—3½	<i>z</i> 'D° — <i>e</i> 'H	2987. 542	A	1h	8. 00	12. 13	4½—5½	<i>y</i> 'G° — <i>e</i> 'H
						(430)							(437)
2717. 888	A	3h	7. 57	12. 11	7½—6½	<i>z</i> 'I° — <i>e</i> 'H	2803. 450	A	2h	8. 00	12. 41	4½—3½	<i>y</i> 'G° — <i>e</i> 'F
2712. 317	A	1h	7. 60	12. 15	5½—4½	(431)	2805. 007	A	2h	8. 04	12. 44	3½—2½	(438)
2697. 801	A	2h	7. 59	12. 17	4½—3½								
2731. 247	A	1h	7. 60	12. 11	6½—6½		2963. 897	A	3h	8. 07	12. 23	5½—5½	<i>z</i> 'H° — <i>e</i> 'H
2723. 438	A	0	7. 60	12. 13	5½—5½		*2959. 841	A	4	8. 09	12. 26	4½—4½	(439)
2671. 941	A	1h	7. 67	12. 29	4½—4½	<i>y</i> 'F° — <i>f</i> 'F							
2657. 181	A	0h	7. 66	12. 31	3½—3½	(432)	2763. 674	A	2h	8. 20	12. 66	6½—5½	<i>y</i> 'H° — <i>f</i> 'G
2653. 678	A	0h	7. 67	12. 32	2½—2½								(440)
2653. 586	A	0h	7. 68	12. 33	1½—1½		2940. 136	A	2h	8. 59	12. 79	3½—4½	<i>y</i> 'F° — <i>e</i> 'G
2665. 337	A	0h	7. 66	12. 29	3½—4½		2911. 823	A	1h	8. 60	12. 84	2½—3½	(441)
2663. 269	A	0	7. 67	12. 31	2½—3½								
2760. 757	A	tr	7. 66	12. 13	4½—5½	<i>z</i> 'G° — <i>e</i> 'H	2882. 523	A	2h	9. 13	13. 41	6½—6½	<i>y</i> 'I° — <i>e</i> 'I
						(433)	2884. 282	A	2h	9. 13	13. 41	5½—5½	(442)
2716. 572	A	3h	7. 69	12. 23	6½—5½	<i>z</i> 'I° — <i>e</i> 'H							
*2726. 254§	A	3h	7. 74	12. 26	5½—4½	(434)							

Strongest Unclassified Lines of Fe II of Wavelength Longer Than 2000 Å

Air						Air							
2968. 906	A	2				2579. 127	A	3h					
2931. 593	A	4				2521. 485	A	2					
2770. 432	A	2				2521. 209	A	2					
2761. 635	A	2				2515. 105	A	3					
2761. 128	A	2				2508. 338	A	2h					
2757. 818	A	2				2495. 860	A	5					
2754. 155	A	2				2488. 335	A	2					
2732. 328	A	2				2450. 027	A	3					
2731. 841	A	2				2429. 849	A	2					
2728. 567	A	2h				2387. 380	A	2					
2607. 529	A	3h				2365. 771	A	2h					

Fe III

I P 30.48 Anal A List C June 1950

REFERENCES

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 C. E. Moore, *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. II, 60 (1952). Changes in notation.

* and §§ = Blend Fe III and Fe III, also blend Fe III and Fe II

* and § = Blend Fe III and Fe II

* and ** = Blend Fe III and Fe I

Fe III

Fe III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1122.526	A	9	0.00	11.00	4-3	$a^4D - z^4P^o$	997.081	A	7	2.40	14.78	2-2	$a^4P - z^4P^o \uparrow$
1124.883	A	9	0.05	11.03	3-2	(1)	1007.113	A	3	2.55	14.81	1-1	(9)
1126.72	A	6	0.09	11.05	2-1		994.257	A	3	2.40	14.81	2-1	
1128.02	A	8	0.05	11.00	3-3		1010.005	A	4	2.55	14.78	1-2	
1128.72	A	7	0.09	11.03	2-2								
1129.19	A	7	0.12	11.05	1-1		934.703	A	7	2.40	15.60	2-1	$a^4P - z^4S^o$
1131.914	A	3	0.09	11.00	2-3		946.056	A	6	2.55	15.60	1-1	(10)
1131.194	A	7	0.12	11.03	1-2		950.722	A	3	2.62	15.60	0-1	
1130.404	A	5	0.13	11.05	0-1								
859.721	A	8	0.00	14.36	4-5	$a^4D - z^4F^o \uparrow$	859.838	A	6	2.40	16.75	2-3	$a^4P - w^4D^o \uparrow$
861.832	A	10	0.05	14.38	3-4	(2)	861.284	A	4	2.55	16.89	1-2	(11)
*859.626	A	6	0.09	14.45	2-3		*867.639	A	5	2.62	16.85	0-1	
*861.761	A	8	0.12	14.44	1-2								
862.735	A	5	0.13	14.44	0-1								
858.602	A	3	0.00	14.38	4-4								
857.392	A	5	0.05	14.45	3-3		1017.254	A	9	2.48	14.61	6-6	$a^4H - z^4H^o$
860.315	A	5	0.09	14.44	2-2		1017.745	A	8	2.51	14.64	5-5	(12)
862.028	A	5	0.12	14.44	1-1		1018.286	A	8	2.53	14.65	4-4	
*861.761	A	8	0.05	14.38	3-3	$a^4D - z^4D^o \uparrow$	981.373	A	10	2.48	15.05	6-5	$a^4H - z^4G^o$
*864.425	A	4	0.09	14.37	2-2	(3)	*983.877	A	10b	2.51	15.05	5-4	(13)
858.565	A	4	0.00	14.38	4-3		985.824	A	8	2.53	15.05	4-3	
862.191	A	2	0.05	14.37	3-2								
854.073	A	5	0.05	14.51	3-4		901.034	A	5	2.48	16.18	6-7	$a^4H - z^4K^o$
864.034	A	6	0.09	14.38	2-3		905.338	A	7	2.51	16.14	5-6	(14)
865.896	A	4	0.12	14.37	1-2								
844.284	A	10	0.00	14.62	4-3	$a^4D - y^4P^o \uparrow$	891.172	A	10	2.48	16.33	6-6	$a^4H - y^4H^o \uparrow$
845.408	A	9	0.05	14.66	3-2	(4)	890.755	A	9	2.51	16.37	5-5	(15)
*846.534	A	6	0.09	14.67	2-1		891.442	A	8	2.53	16.38	4-4	
*847.425	A	8b	0.05	14.62	3-3								
847.578	A	7	0.09	14.66	2-2		845.925	A	7	2.48	17.07	6-6	$a^4H - z^4H^o \uparrow$
847.924	A	6	0.12	14.67	1-1		851.332	A	7	2.51	17.01	5-5	(16)
							854.367	A	6*	2.53	16.98	4-4	
823.257	A	6	0.00	15.00	4-5	$a^4D - y^4F^o \uparrow$	837.439	A	7	2.48	17.22	6-5	$a^4H - w^4G^o \uparrow$
827.777	A	6	0.05	14.97	3-4	(5)	*838.048	A	8	2.51	17.24	5-4	(17)
831.464	A	5	0.09	14.94	2-3		838.936	A	5	2.53	17.24	4-3	
834.067	A	4	0.12	14.92	1-2								
813.382	A	10	0.00	15.18	4-4	$a^4D - y^4D^o \uparrow$	832.328	A	5	2.48	17.31	6-7	$a^4H - y^4I^o \uparrow$
817.038	A	7	0.05	15.16	3-3	(6)	*836.521	A	7	2.51	17.26	5-6	(18)
818.598	A	4	0.09	15.17	2-2		840.141	A	4	2.53	17.22	4-5	
*816.163	A	6	0.12	15.24	1-0								
816.273	A	6	0.05	15.18	3-4		807.547	A	9	2.48	17.76	6-5	$a^4H - w^4G^o$
808.079	A	5	0.00	15.28	4-3	$a^4D - z^4P^o \uparrow$	807.855	A	8	2.51	17.79	5-4	(19)
811.284	A	8	0.05	15.27	3-2	(7)	808.840	A	8	2.53	17.79	4-3	
814.242	A	6	0.09	15.25	2-1								
810.940	A	7	0.05	15.28	3-3								
813.288	A	4	0.09	15.27	2-2								
728.810	A	6	0.00	16.94	4-4	$a^4D - z^4D^o \uparrow$	1032.123	A	8	2.65	14.61	4-4	$a^4F - z^4F^o \uparrow$
729.996	A	5	0.05	16.96	3-3	(8)	1035.768	A	6	2.68	14.60	3-3	(20)
730.96	A	2	0.09	16.98	2-2		1038.355	A	6	2.70	14.59	2-2	
							995.150	A	6	2.65	15.05	4-5	$a^4F - z^4G^o \uparrow$
							997.599	A	6*	2.68	15.05	3-4	(21)
							999.376	A	5	2.70	15.05	2-3	

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
*991. 232	A	9	2. 65	15. 10	4-3	$a^3F - z^3D^\circ \uparrow$
990. 800	A	6	2. 68	15. 14	3-2	(22)
990. 235	A	4	2. 70	15. 16	2-1	
967. 197	A	6	2. 65	15. 41	4-3	$a^3F - y^3D^\circ \uparrow$
968. 955	A	4	2. 68	15. 42	3-2	(23)
969. 954	A	3	2. 70	15. 43	2-1	
880. 949	A	6	2. 65	16. 66	4-3	$a^3F - x^3D^\circ$
880. 447	A	6	2. 68	16. 70	3-2	(24)
882. 147	A	4	2. 70	16. 69	2-1	
*836. 521	A	7	2. 65	17. 41	4-4	$a^3F - v^3F^\circ$
840. 381	A	5	2. 68	17. 37	3-3	(25)
841. 088	A	5	2. 70	17. 38	2-2	
1066. 181	A	10b*	3. 03	14. 61	5-4	$a^3G - z^3F^\circ \uparrow$
1071. 746	A	5	3. 08	14. 60	4-3	(26)
1075. 024	A	4	3. 10	14. 59	3-2	
1066. 143	A	10b*	3. 03	14. 61	5-6	$a^3G - z^3H^\circ$
1068. 190	A	5	3. 08	14. 64	4-5	(27)
1069. 019	A	5	3. 10	14. 65	3-4	
1026. 790	A	6	3. 03	15. 05	5-5	$a^3G - z^3G^\circ \uparrow$
1030. 924	A	6	3. 08	15. 05	4-4	(28)
1033. 298	A	5	3. 10	15. 05	3-3	
*991. 232	A	9	3. 03	15. 49	5-4	$a^3G - y^3F^\circ$
993. 080	A	7	3. 08	15. 51	4-3	(29)
994. 724	A	6	3. 10	15. 51	3-2	
881. 088	A	7	3. 03	17. 04	5-5	$a^3G - x^3G^\circ$
883. 688	A	6	3. 08	17. 05	4-4	(30)
884. 600	A	5	3. 10	17. 06	3-3	
851. 150	A	7	3. 03	17. 54	5-4	$a^3G - u^3F^\circ \uparrow$
851. 992	A	6	3. 08	17. 57	4-3	(31)
851. 842	A	6	3. 10	17. 60	3-2	
842. 020	A	6	3. 03	17. 69	5-6	$a^3G - w^3H^\circ \uparrow$
847. 700	A	6	3. 08	17. 64	4-5	(32)
849. 524	A	5	3. 10	17. 64	3-4	
*838. 048	A	8	3. 03	17. 76	5-5	$a^3G - v^3G^\circ \uparrow$
*839. 319	A	5	3. 08	17. 79	4-4	(33)
840. 518	A	4	3. 10	17. 79	3-3	
1895. 456	A	20	3. 71	10. 23	3-4	$a^7S - z^7P^\circ$
1914. 056	A	19	3. 71	10. 16	3-3	(34)
1926. 304	A	18	3. 71	10. 12	3-2	
*983. 877	A	10b	3. 75	16. 30	6-7	$a^1I - z^1K^\circ$
						(35)
950. 334	A	10	3. 75	16. 74	6-6	$a^1I - z^1I^\circ$
						(36)
899. 417	A	8	3. 75	17. 47	6-6	$a^1I - y^1I^\circ$
						(37)
873. 462	A	8	3. 75	17. 88	6-5	$a^1I - x^1H^\circ$
						(38)

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1142. 955	A	5	3. 81	14. 61	3-4	$a^3D - z^3F^\circ \uparrow$
1142. 464	A	4	3. 79	14. 60	2-3	(39)
1143. 67	A	3	3. 79	14. 59	1-2	
1063. 872	A	8	3. 81	15. 41	3-3	$a^3D - y^3D^\circ \uparrow$
1061. 708	A	6	3. 79	15. 42	2-2	(40)
1061. 245	A	5	3. 79	15. 43	1-1	
1019. 789	A	6	3. 81	15. 91	3-2	$a^3D - y^3P^\circ$
1021. 561	A	4	3. 79	15. 88	2-1	(41)
1024. 108	A	3	3. 79	15. 85	1-0	
991. 829	A	6	3. 81	16. 26	4-5	$a^1G - z^1H^\circ$
						(42)
834. 944	A	6	3. 81	18. 60	4-3	$a^1G - w^1F^\circ$
						(43)
962. 655	A	5	4. 30	17. 12	0-1	$a^1S - z^1P^\circ$
						(44)
961. 901	A	7	4. 42	17. 25	2-2	$a^1D - y^1D^\circ$
						(45)
955. 572	A	5	4. 42	17. 34	2-3	$a^1D - y^1F^\circ$
						(46)
Air						
2418. 568	A	7	5. 06	10. 16	2-3	$a^3S - z^3P^\circ$
2438. 174	A	8	5. 06	10. 12	2-2	(47)
2078. 989	A	14	5. 06	11. 00	2-3	$a^3S - z^3P^\circ$
2068. 243	A	12	5. 06	11. 03	2-2	(48)
2061. 552	A	10	5. 06	11. 05	2-1	
Vac						
*892. 417	A	6	7. 06	20. 90	4-4	$b^1G - v^1G^\circ$
						(49)
1987. 503	A	15	7. 83	14. 04	6-6	$a^4G - z^4G^\circ \uparrow$
1991. 613	A	14	7. 83	14. 03	5-5	(50)
1994. 073	A	13	7. 84	14. 03	4-4	
1995. 563	A	12	7. 84	14. 02	3-3	
*1996. 420	A	12	7. 84	14. 02	2-2	
1989. 975	A	7	7. 83	14. 03	6-5	
1993. 262	A	7	7. 83	14. 03	5-4	
1995. 266	A	7	7. 84	14. 02	4-3	
*1996. 420	A	12	7. 84	14. 02	3-2	
1915. 083	A	15	7. 83	14. 28	6-7	$a^4G - z^4H^\circ \uparrow$
1922. 789	A	15	7. 83	14. 26	5-6	(51)
1930. 387	A	15	7. 84	14. 23	4-5	
1937. 345	A	14	7. 84	14. 21	3-4	
1943. 481	A	14	7. 84	14. 19	2-3	

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1890.669	A	13	7.83	14.36	6-5	$a^3G - z^3F^o$
1886.757	A	12	7.83	14.38	5-4	(52)
1866.305	A	9	7.84	14.45	4-3	
*1869.828	A	10	7.84	14.44	3-2	
1871.152	A	9	7.84	14.44	2-1	
1892.140	A	5	7.83	14.36	5-5	
*1887.471	A	8	7.84	14.38	4-4	
1866.554	A	5	7.84	14.45	3-3	
*1869.828	A	10	7.84	14.44	2-2	
*1849.960	A	5	7.83	14.51	5-4	$a^3G - z^3D^o \dagger$
1887.197	A	8	7.84	14.38	4-3	(53)
*1889.451	A	5	7.84	14.37	3-2	
*1890.893	A	2	7.84	14.37	2-1	
1976.126	A	8	8.21	14.45	3-3	$a^3P - z^3F^o \dagger$
1982.076	A	6	8.21	14.44	2-2	(54)
1958.583	A	11	8.21	14.51	3-4	$a^3P - z^3D^o \dagger$
Air						(55)
2001.258	A	4	8.21	14.38	2-3	
2006.262	A	3	8.22	14.37	1-2	
Vac						
*1999.588	A	9	8.21	14.38	3-3	
Air						
2003.491	A	8	8.21	14.37	2-2	
2007.841	A	6	8.22	14.37	1-1	
Vac						
1982.805	A	8	8.21	14.43	3-2	$a^3P - z^3S^o$
1985.105	A	3	8.21	14.43	2-2	(56)
1987.810	A	3	8.22	14.43	1-2	
1923.877	A	7	8.21	14.62	3-3	$a^3P - y^3P^o$
1915.750	A	2	8.21	14.66	2-2	(57)
1912.920	A	4	8.22	14.67	1-1	
1913.622	A	4	8.21	14.66	3-2	
1910.401	A	6	8.21	14.67	2-1	
*1926.013§§	A	10	8.21	14.62	2-3	
1918.284	A	7	8.22	14.66	1-2	
Air						
2144.282	A	8	8.60	14.36	4-5	$b^3D - z^3F^o$
*2143.827	A	7	8.62	14.38	3-4	(58)
2116.588	A	7	8.62	14.45	2-3	
2118.567	A	6	8.62	14.44	1-2	
2118.415	A	5	8.61	14.44	0-1	
2137.365	A	8	8.60	14.38	4-4	
*2120.767	A	4	8.62	14.44	2-2	
2120.239	A	5	8.62	14.44	1-1	
*2120.767	A	4	8.62	14.44	3-2	
2090.240	A	6	8.60	14.51	4-4	$b^3D - z^3D^o$
*2143.470	A	8	8.62	14.38	3-3	(59)
*2146.062	A	8	8.62	14.37	2-2	
2145.616	A	6	8.62	14.37	1-1	
2137.009	A	5	8.60	14.38	4-3	
*2146.062	A	8	8.62	14.37	3-2	
2147.904	A	7	8.62	14.37	2-1	
*2146.339	A	6	8.62	14.37	1-0	
2096.430	A	6	8.62	14.51	3-4	
*2143.470	A	8	8.62	14.38	2-3	
*2143.827	A	7	8.62	14.37	1-2	
2143.76	A	3	8.61	14.37	0-1	
2050.739	A	7	8.60	14.62	4-3	$b^3D - y^3P^o$
2044.970	A	4	8.62	14.66	3-2	(60)
2038.908	A	2	8.62	14.67	2-1	
2036.845	A	2	8.62	14.67	1-1	

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1931.507	A	14	8.60	15.00	4-5	$b^3D - y^3F^o$
1945.342	A	12	8.62	14.97	3-4	(61)
*1954.223	A	10b	8.62	14.94	2-3	
1959.324	A	8	8.62	14.92	1-2	
1962.717	A	5	8.61	14.90	0-1	
*1940.018	A	8	8.60	14.97	4-4	
*1954.223	A	10b	8.62	14.94	3-3	
1961.230	A	6	8.62	14.92	2-2	
*1964.260	A	7	8.62	14.90	1-1	
*1966.201§	A	2	8.62	14.90	2-1	
1877.989	A	12	8.60	15.18	4-4	$b^3D - y^3D^o \dagger$
*1884.596	A	8	8.62	15.17	2-2	(62)
*1882.047	A	10	8.62	15.17	1-1	
*1884.596	A	10	8.60	15.16	4-3	
1883.816	A	8	8.62	15.17	3-2	
1863.317	A	3	8.62	15.17	2-1	
1882.979	A	4	8.62	15.24	1-0	
*1849.960	A	4	8.62	15.18	3-4	
1861.665	A	5	8.60	15.28	4-3	$b^3D - z^3P^o$
*1854.826	A	3	8.62	15.25	2-1	(63)
*1856.690	A	9b	8.62	15.28	3-3	
1859.955	A	7	8.62	15.27	2-2	
*1854.826	A	3	8.62	15.25	1-1	
1854.975	A	9b	8.62	15.28	2-3	
1858.542	A	5	8.62	15.27	1-2	
Air						
2232.430	A	5	8.61	15.25	0-1	
2243.405	A	10	8.73	14.26	5-6	$b^3G - z^3H^o$
2252.268	A	8	8.73	14.23	4-5	(64)
2252.463	A	5	8.73	14.21	3-4	
2260.547	A	4	8.73	14.21	4-4	
2191.215	A	7	8.73	14.19	3-3	
2185.654	A	8	8.73	14.36	5-5	$b^3G - z^3F^o \dagger$
2157.109	A	5	8.73	14.38	4-4	(65)
2183.980	A	2	8.73	14.45	3-3	
2157.287	A	6	8.73	14.38	5-4	
2097.692	A	3	8.73	14.45	4-3	
2103.799	A	12	8.73	14.61	5-4	$b^3G - z^3F^o$
2107.324	A	12	8.73	14.60	4-3	(66)
2099.231	A	10	8.73	14.59	3-2	
2103.647	A	5	8.73	14.61	4-4	
2097.480	A	5	8.73	14.60	3-3	
*2090.139	A	15	8.73	14.61	5-6	$b^3G - z^3H^o$
2084.349	A	12	8.73	14.64	4-5	(67)
2088.625	A	10	8.73	14.65	3-4	
2084.515	A	5	8.73	14.64	5-5	
Vac						
1951.007	A	3	8.73	14.65	4-4	
1952.648	A	12	8.73	15.05	5-5	$b^3G - z^3G^o \dagger$
*1953.322	A	11	8.73	15.05	4-4	(68)
Air						
*2235.699	A	13	8.73	15.05	3-3	
2227.848	A	6	9.10	14.62	2-3	$c^3P - y^3P^o$
2221.830	A	7	9.12	14.66	1-2	(69)
2220.611	A	10	9.10	14.66	2-2	
2214.616	A	3	9.12	14.67	1-1	
2174.658	A	4	9.10	14.67	2-1	
2166.952	A	15	9.10	14.78	2-2	$c^3P - z^3P^o$
2161.270	A	12	9.12	14.81	1-1	(70)
2157.710	A	12	9.10	14.81	2-1	
2180.410	A	10	9.12	14.84	1-0	
2171.045	A	12	9.12	14.78	1-2	
	A	12	9.13	14.81	0-1	

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1901.096	A	9	10.26	16.76	5-6	$a^5F - y^5G^{\circ}$
1917.351	A	8	10.27	16.70	4-5	(95)
1923.003	A	7	10.28	16.70	3-4	
1932.818	A	5	10.29	16.68	2-3	
1949.666	A	3	10.33	16.66	1-2	
1916.507	A	5	10.26	16.70	5-5	
1920.186	A	4	10.27	16.70	4-4	
*1928.265	A	5b	10.28	16.68	3-3	
*1938.775	A	4	10.29	16.66	2-2	
1885.125	A	9	10.26	16.81	5-5	$a^5F - x^5F^{\circ} \dagger$
1892.890	A	5	10.27	16.79	4-4	(96)
1894.933	A	4	10.28	16.79	3-3	
m1895.41	P	Fe III	10.29	16.80	2-2	
1901.540	A	3	10.33	16.82	1-1	
1892.073	A	5	10.26	16.79	5-4	
1892.247	A	5	10.27	16.79	4-3	
1891.070	A	4	10.28	16.80	3-2	
1891.186	A	3	10.29	16.82	2-1	
1885.947	A	5	10.27	16.81	4-5	
1849.407	A	7	10.26	16.94	5-4	$a^5F - x^5D^{\circ} \dagger$
1842.927	A	5	10.27	16.96	4-3	(97)
1841.387	A	3	10.28	16.98	3-2	
*1844.942	A	3	10.29	16.98	2-1	
1854.384	A	3	10.33	16.98	1-0	
1850.200	A	5	10.27	16.94	4-4	
*1845.521	A	7	10.28	16.96	3-3	
		7	10.29	16.98	2-2	
Air						
2144.743	A	7	10.30	16.05	6-7	$b^1I - z^1I^{\circ}$
2153.320	A	3	10.30	16.03	6-6	(98)
2134.861	A	9	10.30	16.08	6-5	
2070.539	A	8	10.30	16.26	6-5	$b^1I - z^1H^{\circ}$
						(99)
2058.560	A	8	10.30	16.30	6-7	$b^1I - z^1K^{\circ}$
						(100)
Vac						
1917.453	A	9	10.30	16.74	6-6	$b^1I - z^1I^{\circ}$
						(101)
Air						
2923.902	A	8	10.39	14.61	4-4	$c^3F - z^3F^{\circ}$
2977.572	A	5	10.45	14.60	3-3	(102)
2958.286	A	6	10.42	14.59	2-2	
2421.514	A	5	10.39	15.49	4-4	$c^3F - y^3F^{\circ}$
2420.405	A	3	10.42	15.51	2-2	(103)
2123.590	A	8	10.42	16.23	2-2	$c^3F - z^1D^{\circ}$
						(104)
2055.855	A	6	10.39	16.39	4-4	$c^3F - x^3F^{\circ}$
2108.676	A	5	10.45	16.31	3-3	(105)
2086.128	A	4	10.39	16.31	4-3	
2077.755	A	4	10.45	16.39	3-4	
2095.327	A	3	10.42	16.31	2-3	
Vac						
1938.901	A	10	10.39	16.76	4-5	$c^3F - y^3G^{\circ} \dagger$
1965.309	A	8	10.45	16.73	3-4	(106)
1992.858	A	6	10.42	16.61	2-3	
*1940.018	A	8	10.39	16.75	4-3	$c^3F - w^3D^{\circ}$
1919.572	A	4	10.42	16.85	2-1	(107)
1906.457	A	6	10.39	16.86	4-4	$c^3F - w^3F^{\circ} \dagger$
1918.480	A	7	10.45	16.89	3-3	(108)

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
*2241.545	A	12	10.72	16.23	2-2	$b^1D - z^1D^{\circ}$
						(109)
*2210.073	A	6	10.72	16.31	2-3	$b^1D - x^3F^{\circ}$
*2208.855	A	10	10.72	16.31	2-2	(110)
2262.888	A	3	10.85	16.31	3-3	$b^1F - x^3F^{\circ}$
2261.592	A	12	10.85	16.31	3-2	(111)
2151.776	A	15	10.85	16.59	3-4	$b^1F - z^1G^{\circ}$
						(112)
2720.381	A	5	10.95	15.49	5-4	$b^3H - y^3F^{\circ}$
						(113)
2431.325	A	5	10.98	16.05	6-7	$b^3H - z^3I^{\circ}$
2403.551	A	6	10.95	16.08	4-5	(114)
2373.904	A	5	10.98	16.18	6-7	$b^3H - z^3K^{\circ}$
2376.725	A	5	10.95	16.14	5-6	(115)
Vac						
1950.334	A	10	10.98	17.31	6-7	$b^3H - y^3I^{\circ}$
1954.975	A	8	10.95	17.26	5-6	(116)
1966.740	A	8	10.95	17.22	4-5	
1838.309	A	7	10.98	17.69	6-6	$b^3H - w^3H^{\circ} \dagger$
1844.547	A	6	10.95	17.64	5-5	(117)
1845.304	A	5	10.95	17.64	4-4	
1601.211	A	10n	11.00	18.71	3-4	$z^3P^{\circ} - e^3D$
*1607.723	A	9n	11.03	18.71	2-3	(118)
1611.763	A	7n	11.05	18.71	1-2	
*1601.289	A	6n	11.00	18.71	3-3	
*1607.723	A	9n	11.03	18.71	2-2	
1611.723	A	7n	11.05	18.71	1-1	
*1601.289	A	6n	11.00	18.71	3-2	
1595.597	A	6n	11.00	18.73	3-2	$z^3P^{\circ} - e^3S$
1602.000	A	5n	11.03	18.73	2-2	(119)
1606.014	A	3n	11.05	18.73	1-2	
Air						
*2813.241**	A	10	11.10	15.49	5-4	$c^3G - y^3F^{\circ}$
2788.258	A	6	11.08	15.51	4-3	(120)
2778.868	A	5	11.07	15.51	3-2	
*2803.4415	A	6	11.08	15.49	4-4	
m2360.28	P	Fe II	11.10	16.33	5-6	$c^3G - y^3H^{\circ}$
*2336.7685	A	10	11.08	16.37	4-5	(121)
2326.948	A	10	11.07	16.38	3-4	
2181.407	A	4	11.10	16.76	5-5	$c^3G - y^3G^{\circ}$
2184.114	A	4	11.08	16.73	4-4	(122)
2228.881	A	4	11.07	16.61	3-3	
2190.075	A	3	11.10	16.73	5-4	
2233.172	A	4	11.08	16.61	4-3	
2181.210	A	2	11.10	16.76	5-6	$c^3G - y^3G^{\circ}$
2195.532	A	6	11.08	16.70	4-5	(123)
2195.081	A	5	11.07	16.70	3-4	
*2209.73955	A	5	11.07	16.66	3-2	
2067.302	A	6	11.10	17.07	5-6	$c^3G - x^3H^{\circ}$
2083.530	A	6	11.08	17.01	4-5	(124)
2090.053	A	7	11.07	16.98	3-4	

Fe III—Continued

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2907.701	A	12	11.17	15.41	4-3	$d^4F - y^4D^{\circ}$	*2447.374§	A	7	11.54	16.59	4-4	$c^4G - z^4G^{\circ}$
2904.431	A	12	11.17	15.42	3-2	(125)							(143)
*2895.076§	A	8	11.16	15.43	2-1		2319.466	A	8	11.54	16.86	4-4	$c^4G - w^4F^{\circ}$
2908.651	A	5	11.17	15.41	3-3		2309.578	A	4	11.54	16.89	4-3	(144)
*2899.386	A	4	11.16	15.42	2-2		2158.472	A	12	11.54	17.26	4-4	$c^4G - y^4G^{\circ}$
*2858.664§	A	7	11.17	15.49	4-4	$d^4F - y^4F^{\circ}\dagger$							(145)
2843.779	A	4	11.17	15.51	3-3	(126)	2105.020	A	5	11.54	17.41	4-4	$c^4G - v^4F^{\circ}$
*2836.107§	A	4	11.16	15.51	2-2		Vac						(146)
2277.820	A	8	11.17	16.59	4-4	$d^4F - z^4G^{\circ}$	1957.938	A	6	11.54	17.85	4-5	$c^4G - y^4H^{\circ}$
2278.432	A	6	11.17	16.59	3-4	(127)							(147)
2229.267	A	10	11.17	16.70	4-5	$d^4F - y^4G^{\circ}$							
2233.654	A	6	11.17	16.70	3-4	(128)	Air						
2245.776	A	4	11.16	16.66	2-2		*2905.80§§	A	8	11.98	16.23	3-2	$c^4F - z^4D^{\circ}$
2100.961	A	8	11.17	17.04	4-5	$d^4F - x^4G^{\circ}\dagger$							(148)
2099.332	A	6	11.17	17.05	3-4	(129)	2678.810	A	6	11.98	16.59	3-4	$c^4F - z^4G^{\circ}$
2092.945	A	6	11.16	17.06	2-3								(149)
2551.098	A	6	11.42	16.26	5-5	$a^4H - z^4H^{\circ}$	2552.937	A	5	11.98	16.81	3-3	$c^4F - z^4F^{\circ}$
						(130)	2339.913	A	5	11.98	17.25	3-2	$c^4F - y^4D^{\circ}$
2389.533	A	8	11.42	16.59	5-4	$a^4H - z^4G^{\circ}$							(151)
						(131)	2302.808	A	8	11.98	17.34	3-3	$c^4F - y^4F^{\circ}$
*2321.71§	A	10	11.42	16.74	5-6	$a^4H - z^4I^{\circ}$							(152)
						(132)	*2274.00§	A	8	11.98	17.41	3-4	$c^4F - v^4F^{\circ}$
2267.42	A	10	11.42	16.86	5-4	$a^4H - w^4F^{\circ}$	2290.126	A	5	11.98	17.37	3-3	(153)
						(133)	Vac						
2039.507	A	6	11.42	17.47	5-6	$a^4H - y^4I^{\circ}$	1865.202	A	7	11.98	18.60	3-3	$c^4F - w^4F^{\circ}$
						(134)							(154)
Vac						$a^4H - x^4H^{\circ}$							
1911.338	A	7	11.42	17.88	5-5	(135)	Air						
							2850.288	A	7	13.08	17.41	3-4	$d^4D - v^4F^{\circ}\dagger$
Air							2873.795	A	4	13.07	17.37	2-3	(155)
2608.682	A	5	11.53	16.26	4-5	$e^4F - z^4H^{\circ}$	2868.136	A	5	13.07	17.38	1-2	
						(136)	2293.056	A	10	13.08	18.46	3-2	$d^4D - w^4P^{\circ}\dagger$
2537.537	A	4	11.53	16.39	4-4	$e^4F - x^4F^{\circ}$	*2324.359§	A	8	13.07	18.38	2-1	(156)
2584.038	A	6	11.53	16.31	3-2	(137)	2291.850	A	6	13.07	18.46	2-2	
2583.739	A	3	11.53	16.31	2-2								
2303.203	A	3	11.53	16.89	3-3	$e^4F - w^4F^{\circ}$	2818.624	A	6	13.53	17.91	2-3	$c^4D - x^4F^{\circ}$
2303.012	A	7	11.53	16.89	4-3	(138)							(157)
2238.155	A	10	11.53	17.04	4-5	$e^4F - z^4G^{\circ}$	2773.306	A	8	13.53	17.98	2-2	$c^4D - x^4D^{\circ}$
2235.908	A	10	11.53	17.05	3-4	(139)							(158)
2232.690	A	10	11.53	17.06	2-3		2695.13	A	10n	18.19	22.77	5-6	$e^4D - z^4F^{\circ}$
*2235.699	A	6	11.53	17.05	4-4		2695.34	A	9n	18.19	22.77	4-5	(159)
2231.670	A	4	11.53	17.06	3-3		2696.89	A	7n	18.18	22.76	3-4	
2169.709	A	5	11.53	17.22	4-5	$e^4F - w^4G^{\circ}$	2700.02	A	8n	18.18	22.75	2-3	
2162.283	A	5	11.53	17.24	3-4	(140)	2704.43	A	3n	18.18	22.75	1-2	
2160.655	A	6	11.53	17.24	2-3		m2697.37	P	Fe II	18.19	22.77	5-5	
2152.706	A	6	11.53	17.26	4-4	$e^4F - y^4G^{\circ}$	2698.41	A	7n	18.19	22.76	4-4	
						(141)	2701.13	A	8n	18.18	22.75	3-3	
2617.149	A	8	11.54	16.26	4-5	$c^4G - z^4H^{\circ}$	2705.10	A	7n	18.18	22.75	2-2	
						(142)	2706.17	A	2n	18.18	22.75	3-2	

COBALT, $Z=27$

Co I

I P 7.84 Anal A List B October 1949

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 $\lambda = \text{Co II?}$

Co I

Co I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
*2820. 002	A	4	0. 00	4. 38	4½-3½	a 'F -y 'F°†	2407. 249	A	150	0. 00	5. 13	4½-5½	a 'F -x 'G°
2814. 976	A	2	0. 10	4. 48	3½-2½	(1)	2411. 618	A	160	0. 10	5. 22	3½-4½	(6)
2886. 444	A	4	0. 10	4. 38	3½-3½		2414. 458	A	20	0. 17	5. 29	2½-3½	
2862. 602	A	(4)	0. 17	4. 48	2½-2½		2415. 29	A	4	0. 22	5. 33	1½-2½	
							2365. 057	A	20	0. 00	5. 22	4½-4½	
2833. 922	A	(3)	0. 10	4. 46	3½-2½	a 'F -y 'D°†	*2380. 483	A	15	0. 10	5. 29	3½-3½	
2818. 592	A	(3)	0. 17	4. 55	2½-1½	(2)	2392. 029	A	10	0. 17	5. 33	2½-2½	
2850. 947	A	(3)	0. 22	4. 55	1½-1½		2335. 102	A	7	0. 00	5. 29	4½-3½	
							2358. 676	A	7	0. 10	5. 33	3½-2½	
2521. 361	F	100	0. 00	4. 89	4½-3½	a 'F -x 'D°							
2528. 968	F	70	0. 10	4. 98	3½-2½	(3)	2429. 226	A	7	0. 10	5. 18	3½-2½	a 'F -z 'P°
2535. 961	A	50	0. 17	5. 04	2½-1½		2463. 776	A	2	0. 17	5. 18	2½-1½	(7)
2544. 252	A	30	0. 22	5. 07	1½-0½		2489. 249	A	2	0. 22	5. 18	1½-0½	
2574. 351	A	25	0. 10	4. 89	3½-3½		2464. 615	A	3	0. 17	5. 18	2½-2½	
2567. 344	A	30	0. 17	4. 98	2½-2½		2488. 461	A	8	0. 22	5. 18	1½-1½	
2562. 124	A	20	0. 22	5. 04	1½-1½								
2614. 124	A	2	0. 17	4. 89	2½-3½		2370. 514	A	6	0. 10	5. 31	3½-3½	a 'F - 3°
2594. 161	A	2	0. 22	4. 98	1½-2½								(8)
							2372. 832	A	3	0. 17	5. 37	2½-1½	a 'F -z 'P°
2549. 296	A	3	0. 17	5. 01	2½-1½	a 'F -z 'S°†							(9)
						(4)							
2424. 932	A	50	0. 00	5. 09	4½-4½	a 'F -x 'F°†	2303. 504	A	9	0. 00	5. 36	4½-3½	a 'F -w 'D°
2432. 213	A	40	0. 10	5. 17	3½-3½	(5)	2356. 267	A	12	0. 10	5. 34	3½-2½	(10)
2436. 663	F	30	0. 17	5. 24	2½-2½		2388. 374	A	8	0. 17	5. 34	2½-1½	
2439. 038	A	20	0. 22	5. 28	1½-1½		2401. 595	A	10	0. 22	5. 36	1½-0½	
2384. 858	A	20	0. 00	5. 17	4½-3½		2347. 657	A	3	0. 10	5. 36	3½-3½	
2402. 058	A	25	0. 10	5. 24	3½-2½		m2389. 55	P	Co II	0. 17	5. 34	2½-2½	
2473. 901	A	1	0. 10	5. 09	3½-4½		m2411. 57	P	Co I	0. 22	5. 34	1½-1½	
2467. 685	A	6	0. 17	5. 17	2½-3½		2380. 696	A	5	0. 17	5. 36	2½-3½	
2460. 800	A	5	0. 22	5. 24	1½-2½		2412. 762	A	15	0. 22	5. 34	1½-2½	

Co I—Continued

Co I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2309.03	I	30	0.00	5.34	4½-4½	a 4F - w 4F°	2132.76	I	30	0.00	5.79	4½-3½	a 4F - u 4D°
2323.131	A	25	0.10	5.41	3½-3½	(11)	2146.26	I	25	0.10	5.85	3½-2½	(23)
2335.98	I	20	0.17	5.46	2½-2½		2163.56	I	25	0.17	5.88	2½-1½	
2338.656	A	8	0.22	5.50	1½-1½		2168.70	I	50	0.22	5.91	1½-0½	
m2279.90	P	Fe I	0.00	5.41	4½-3½		2170.55	I	25	0.10	5.79	3½-3½	
2304.182	A	15	0.10	5.46	3½-2½		2173.82	I	20	0.17	5.85	2½-2½	
*2316.843	A	8	0.17	5.50	2½-1½		2182.59	I	20	0.22	5.88	1½-1½	
2353.36	A	10	0.10	5.34	3½-4½		2198.75	I	8	0.17	5.79	2½-3½	
2355.480	A	30	0.17	5.41	2½-3½								
2358.177	A	7	0.22	5.46	1½-2½		2116.83	I	30	0.00	5.83	4½-3½	a 4F - w 4F°
							2158.55	I	12	0.10	5.82	3½-2½	(24)
2295.223	A	20	0.00	5.38	4½-3½	a 4F - r 4F°	2154.08	I	20	0.10	5.83	3½-3½	
2346.161	A	10	0.10	5.36	3½-2½	(12)	2186.45	I	8	0.17	5.82	2½-2½	
2339.048	A	6	0.10	5.38	3½-3½								
2379.160	A	6	0.17	5.36	2½-2½		2089.67	I	10	0.00	5.91	4½-3½	a 4F - 6°
2371.845	A	5	0.17	5.38	2½-3½		2125.96	I	10	0.10	5.91	3½-3½	(25)
2402.164	A	25	0.22	5.36	1½-2½								
2319.152	A	4	0.10	5.42	3½-2½	a 4F - r 4D°†	2163.02	I	20	0.22	5.93	1½-0½	a 4F - r 4S°
2351.385	A	6	0.17	5.42	2½-2½	(13)							(26)
2373.862	A	10	0.22	5.42	1½-2½		2130.27	I	15	0.17	5.97	2½-1½	a 4F - r 4P°
							2148.70	I	12	0.22	5.97	1½-1½	(27)
2274.495	A	40	0.00	5.43	4½-5½	a 4F - w 4G°	2073.27	I	20£	0.00	5.95	4½-3½	a 4F - t 4D°
2305.169	A	20	0.10	5.45	3½-4½	(14)	2098.93	I	20	0.10	5.98	3½-2½	(28)
2325.530	A	20	0.17	5.48	2½-3½		2120.70	I	20	0.17	5.99	2½-1½	
2337.95	A	7	0.22	5.50	1½-2½		2137.80	I	15	0.22	6.00	1½-0½	
2262.592	A	18	0.00	5.45	4½-4½		2108.98	I	25	0.10	5.95	3½-3½	
2294.003	A	25	0.10	5.48	3½-3½		2125.32	I	15£	0.17	5.98	2½-2½	
2316.157	A	12	0.17	5.50	2½-2½		2138.98	I	12	0.22	5.99	1½-1½	
2251.83	A	2	0.00	5.48	4½-3½		2135.59	I	10	0.17	5.95	2½-3½	
2284.86	A	3	0.10	5.50	3½-2½?		2143.66	I	10	0.22	5.98	1½-2½	
2289.495	A	10	0.10	5.49	3½-2½	a 4F - y 4P°†	2069.00	I	20£	0.00	5.96	4½-3½	a 4F - w 4F°
*2311.38	H	10d	0.17	5.51	2½-1½	(15)	2091.40	I	10	0.10	6.00	3½-2½	(29)
2322.260	A	3	0.22	5.54	1½-0½		2131.06	I	10	0.17	5.96	2½-3½	
2320.906	A	5	0.17	5.49	2½-2½		2135.80	I	12	0.22	6.00	1½-2½	
2333.071	A	10	0.22	5.51	1½-1½								
							2111.42	I	25	0.17	6.02	2½-1½?	a 4F - r 4S°
2227.853	A	15	0.10	5.64	3½-2½	a 4F - w 4D°	2129.50	I	10	0.22	6.02	1½-1½	(30)
2219.16	A	20	0.17	5.73	2½-1½	(16)							
2257.582	A	15	0.17	5.64	2½-2½		2082.11	I	12	0.10	6.03	3½-2½	a 4F - 7°†
2278.30	A	3	0.22	5.64	1½-2½								(31)
							2099.35	I	15	0.17	6.05	2½-1½	a 4F - w 4P°
2184.31	I	15	0.00	5.65	4½-3½	a 4F - r 4G°†	2085.04	I	9	0.22	6.14	1½-0½	(32)
2212.35	I	20	0.10	5.68	3½-2½	a 4F - r 4P°†	2031.96	I	15	0.00	6.07	4½-	a 4F - 9°
2246.599	A	25	0.17	5.67	2½-1½	(18)	2066.22	I	12	0.10	6.07	3½-	(33)
2267.113	A	10	0.22	5.67	1½-1½								
							2054.06	I	12	0.10	6.11	3½-3½	a 4F - 10°†
2174.589	A	50N	0.00	5.68	4½-3½	a 4F - r 4D°	2079.3°	I	12	0.17	6.11	2½-3½	(34)
2196.458	A	40	0.10	5.72	3½-2½	(19)							
2228.80	I	8	0.17	5.71	2½-1½		2081.04	I	10	0.22	6.15	1½-2½	a 4F - 11°†
2236.796	A	15	0.22	5.74	1½-0½								(35)
m2213.89	P	Co I	0.10	5.68	3½-3½		2052.82	I	6	0.17	6.19	2½-1½	a 4F - 12°
2225.339	A	12	0.17	5.72	2½-2½		2069.91	I	12	0.22	6.19	1½-1½	(36)
2248.981	A	9	0.22	5.71	1½-1½								
2243.254	A	(8)	0.17	5.68	2½-3½								
2245.463	A	6	0.22	5.72	1½-2½								
2180.060	A	40N	0.10	5.76	3½-2½	a 4F - r 4D°†	m1970.77	P	Co I	0.00	6.26	4½-3½	a 4F - s 4D°
2232.460	A	5	0.17	5.70	2½-1½	(20)	1987.15	I	12?	0.10	6.31	3½-2½	(37)
2208.508	A	25	0.17	5.76	2½-2½		1982.52	I	20	0.17	6.40	2½-1½	
2252.712	A	15	0.22	5.70	1½-1½		1981.97	I	20	0.22	6.45	1½-0½	
							2002.32	I	25£	0.10	6.26	3½-3½	(Air)
*2213.84	I	20£	0.17	5.75	2½-1½	a 4F - y 4S°†	2010.10	I	20	0.17	6.31	2½-2½	(Air)
2233.759	A	35	0.22	5.75	1½-1½	(21)	1998.49	I	251	0.22	6.40	1½-1½	(Vac)
							2026.51	I	6	0.22	6.31	1½-2½	(Air)
2207.853	A	25	0.17	5.76	2½-1½	a 4F - y 4P°	Vac						
2207.71	I	25	0.22	5.81	1½-0½	(22)	1953.71	I	8	0.00	6.32	4½-3½	a 4F - 15°
2227.666	A	10	0.22	5.76	1½-1½		1985.36	I	10	0.10	6.32	3½-3½	(38)
							2008.28	I	201	0.17	6.32	2½-3½	(Air)

Co I—Continued

Co I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1926. 90	I	10	0. 00	6. 41	4½-3½	a 'F -t 'F°	2511. 019	A	20	0. 43	5. 34	4½-4½	b 'F -w 'F°
1957. 69	I	12N	0. 10	6. 41	3½-3½	(39)	2517. 792	A	8	0. 51	5. 41	3½-3½	(56)
1980. 59	I	15	0. 17	6. 41	2½-3½		2530. 134	A	15	0. 58	5. 46	2½-2½	
1961. 26	I	8	0. 22	6. 52	1½-2½		2532. 176	A	5	0. 63	5. 50	1½-1½	
							2476. 640	A	10	0. 43	5. 41	4½-3½	
1976. 97	I	30	0. 17	6. 42	2½-2½	a 'F -17°	2495. 551	A	4	0. 51	5. 46	3½-2½	
						(40)	2507. 678	A	4	0. 58	5. 50	2½-1½	
1956. 22	I	15	0. 17	6. 48	2½-	a 'F -20°	2553. 337	A	5	0. 51	5. 34	3½-4½	
1971. 75	I	15	0. 22	6. 48	1½-	(41)	2553. 004	A	5	0. 58	5. 41	2½-3½	
							2555. 074	A	4	0. 63	5. 46	1½-2½	
1884. 45	I	10	0. 00	6. 55	4½-	a 'F -21°	2470. 270	A	6	0. 43	5. 43	4½-5½	b 'F -w 'G°
						(42)	2496. 713	A	5	0. 51	5. 45	3½-4½	(57)
1934. 34	I	12	0. 17	6. 56	2½-3½	a 'F -s 'F°	2517. 875	F	(2R)	0. 58	5. 48	2½-3½	
						(43)	2531. 354	A	5	0. 63	5. 50	1½-2½	
1838. 28	I	15	0. 00	6. 72	4½-3½	a 'F -24°†	2456. 22	H	5	0. 43	5. 45	4½-4½	
						(44)	2483. 613	A	12	0. 51	5. 48	3½-3½	
1834. 99	I	10E	0. 10	6. 83	3½-3½?	a 'F -v 'F°†	2506. 873	A	12	0. 58	5. 50	2½-2½	
1842. 34	I	25E	0. 17	6. 87	2½-2½?	(45)	2443. 548	A	5	0. 43	5. 48	4½-3½	
1852. 71	I	30E	0. 10	6. 76	3½-4½		2472. 922	A	7	0. 51	5. 50	3½-2½	
1855. 05	I	40E	0. 17	6. 83	2½-3½								
1856. 13	I	15E	0. 22	6. 87	1½-2½		2406. 266	A	10	0. 51	5. 64	3½-2½	b 'F -w 'D°†
													(58)
1820. 42	I	12	0. 00	6. 78	4½-3½	a 'F -26°	2388. 175	A	8	0. 51	5. 68	3½-2½	b 'F -x 'P°†
1847. 89	I	30	0. 10	6. 78	3½-3½	(46)	2425. 593	A	6	0. 58	5. 67	2½-1½	(59)
							2419. 828	A	4	0. 58	5. 68	2½-2½	
1814. 20	I	12	0. 00	6. 80	4½-3½	a 'F -28°	2352. 864	A	10	0. 43	5. 68	4½-3½	b 'F -v 'D°
1841. 47	I	10	0. 10	6. 80	3½-3½	(47)	2369. 674	A	10	0. 51	5. 72	3½-2½	(60)
							2404. 84	A	2	0. 58	5. 71	2½-1½	
1832. 47	I	15	0. 10	6. 84	3½-2½	a 'F -29°†	2413. 187	A	7	0. 63	5. 74	1½-0½	
1852. 52	I	15†	0. 17	6. 84	2½-2½	(48)	2389. 984	A	3	0. 51	5. 68	3½-3½	
							2400. 833	A	7	0. 58	5. 72	2½-2½	
1840. 55	I	10	0. 17	6. 88	2½-1½	a 'F -31°	2421. 688	A	2	0. 58	5. 68	2½-3½	
1854. 28	I	8	0. 22	6. 88	1½-1½	(49)							
1834. 34	I	10	0. 17	6. 90	2½-	a 'F -33°	*2380. 483	A	15	0. 58	5. 76	2½-1½	b 'F -y 'P°†
						(50)	2402. 559	A	7	0. 63	5. 76	1½-1½	(61)
1828. 35	I	12	0. 17	6. 93	2½-	a 'F -34°†	2303. 966	A	15	0. 43	5. 79	4½-3½	b 'F -u 'D°†
						(51)	*2311. 38	H	10d	0. 51	5. 85	3½-2½	(62)
							2339. 550	A	10	0. 51	5. 79	3½-3½	
							2369. 924	A	20	0. 58	5. 79	2½-3½	
							2362. 327	A	7	0. 63	5. 85	1½-2½	
Air							2285. 408	A	15	0. 43	5. 83	4½-3½	b 'F -w 'F°†
2764. 188	A	7	0. 43	4. 89	4½-3½	b 'F -x 'D°	2325. 601	G	(3)	0. 51	5. 82	3½-2½	(63)
2761. 366	A	4	0. 51	4. 98	3½-2½	(52)	2355. 611	A	8	0. 58	5. 82	2½-2½	
2766. 382	A	3	0. 58	5. 04	2½-1½		2350. 284	A	6	0. 58	5. 83	2½-3½	
2774. 960	A	4	0. 63	5. 07	1½-0½		2377. 215	A	4	0. 63	5. 82	1½-2½	
2815. 555	A	7	0. 51	4. 89	3½-3½								
2803. 770	A	6	0. 58	4. 98	2½-2½		2253. 760	A	15	0. 43	5. 91	4½-3½	b 'F - 6°
2796. 228	A	5	0. 63	5. 04	1½-1½		2287. 804	A	20	0. 51	5. 91	3½-3½	(64)
2859. 654	A	8	0. 58	4. 89	2½-3½		*2316. 843	A	8	0. 58	5. 91	2½-3½	
2834. 428	A	3	0. 63	4. 98	1½-2½								
*2648. 635	A	10	0. 43	5. 09	4½-4½	b 'F -x 'F°	2327. 539	A	5	0. 63	5. 93	1½-0½	b 'F -x 'S°
2646. 413	A	4	0. 51	5. 17	3½-3½	(53)							(65)
*2648. 635	A	10	0. 58	5. 24	2½-2½		2290. 541	A	20	0. 58	5. 97	2½-1½	b 'F -x 'P°†
2650. 266	A	3	0. 63	5. 28	1½-1½								(66)
2600. 977	A	3	0. 43	5. 17	4½-3½		2234. 710	A	4	0. 43	5. 95	4½-3½	b 'F -t 'D°†
2610. 762	A	4	0. 51	5. 24	3½-2½		2256. 565	A	5	0. 51	5. 98	3½-2½	(67)
2623. 440	A	2	0. 58	5. 28	2½-1½		2279. 480	A	4	0. 58	5. 99	2½-1½	
2695. 846	A	7	0. 51	5. 09	3½-4½		2298. 356	A	6	0. 63	6. 00	1½-0½	
2685. 336	A	4	0. 58	5. 17	2½-3½		2268. 163	A	6	0. 51	5. 95	3½-3½	
2675. 980	A	6	0. 63	5. 24	1½-2½		2296. 704	A	10	0. 58	5. 95	2½-3½	
2627. 638	A	10	0. 43	5. 13	4½-5½	b 'F -x 'G°†	2229. 734	A	10	0. 43	5. 96	4½-3½	b 'F -v 'F°†
*2622. 059§	A	5	0. 51	5. 22	3½-4½	(54)	2275. 884	A	4	0. 58	6. 00	2½-2½	(68)
2622. 430	A	4	0. 58	5. 29	2½-3½		2291. 450	A	10	0. 58	5. 96	2½-3½	
2622. 250	A	3	0. 63	5. 33	1½-2½		2296. 038	A	8	0. 63	6. 00	1½-2½	
2504. 518	A	8	0. 43	5. 36	4½-3½	b 'F -w 'D°†	2268. 742	A	20	0. 58	6. 02	2½-1½	b 'F -x 'S°
2556. 762	A	3	0. 51	5. 34	3½-2½	(55)	2288. 774	A	12	0. 63	6. 02	1½-1½	(69)
2591. 686	A	3	0. 58	5. 34	2½-1½								
2606. 120	A	4	0. 63	5. 36	1½-0½								

Co I—Continued

Co I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2400.558	A	8	1.04	6.19	2½-1½	a ³ F-12° (115)	Air 2778.813 2758.538 2791.009	A A A	5 2 4	1.87 1.95 2.00	6.32 6.42 6.42	2½-2½ 1½-1½ 0½-1½	b ⁴ P-u ² P°† (128)
2360.789	A	9	1.04	6.27	2½-2½	a ³ F-14° (116)	2929.505 2995.150	A A	(4) (4)	2.03 2.13	6.25 6.25	4½-4½ 3½-3½	a ² G-u ² G°† (129)
2250.496	A	10	0.92	6.40	3½-2½	a ³ F-16°† (117)	2903.197	A	(3)	2.03	6.28	4½-4½	a ² G-x ² H° (130)
2184.92	I	20£	0.92	6.57	3½-2½	a ³ F-u ² D°† (118)	2715.987 2766.215	A A	(6) (5)	2.03 2.13	6.58 6.59	4½-4½ 3½-3½	a ² G-v ² G°† (131)
2189.33 *2237.125	I A	12 25	0.92 1.04	6.56 6.56	3½-3½ 2½-2½	a ³ F-s ² F°† (119)	2396.232 2441.040	A A	0 15	2.03 2.13	7.18 7.18	4½- 3½-	a ² G-36° (132)
2181.12 2225.84 2176.48	I I I	25£ 4 10	0.92 1.04 0.92	6.58 6.59 6.59	3½-4½ 2½-3½ 3½-3½	a ³ F-v ² G° (120)	2371.458	A	12	2.13	7.33	3½-	a ² G-37° (133)
*2187.28	I	25	1.04	6.69	2½-1½	a ³ F-23° (121)	2957.672 2919.552	A A	3 6	2.07 2.03	6.24 6.26	2½-3½ 1½-2½	a ² D-u ² F°† (134)
Vac 1925.05 1963.55	I I	12 20	0.92 1.04	7.33 7.33	3½- 2½-	a ³ F-37° (122)	2943.479 2883.602	A A	3 6	2.07 2.03	6.26 6.31	2½-3½ 1½-2½	a ² D-s ² D°† (135)
Air 2422.568	A	10	1.70	6.80	2½-2½	a ⁴ P-27°† (123)	2927.667 2899.819	A A	(4) (4)	2.07 2.03	6.29 6.29	2½-1½ 1½-0½	a ² D-v ² P°† (136)
2396.588 2410.504	A A	6 10	1.70 1.73	6.85 6.85	2½-2½ 1½-2½	a ⁴ P-30° (124)	2837.154 2785.899 2881.867	A A A	5 4 5	2.07 2.03 2.03	6.42 6.46 6.32	2½-1½ 1½-0½ 1½-2½	a ² D-u ² P°† (137)
2378.905 2413.580	A A	6 6	1.70 1.78	6.89 6.89	2½-1½ 0½-1½	a ⁴ P-32° (125)	2752.070 2775.578	A A	4 3	2.03 2.07	6.52 6.52	1½-2½ 2½-2½	a ² D-t ² F° (138)
2811.508 2826.797 2804.098 2771.697	A A A A	4 3 2 2	1.87 1.95 2.00 2.00	6.26 6.31 6.40 6.45	2½-3½ 1½-2½ 0½-1½ 0½-0½	b ⁴ P-s ² D°† (126)	2772.692	A	2	2.03	6.48	1½-	a ² D-20° (139)
*2797.081 2842.382 2878.558	A A A	5 3 6	1.87 1.95 2.00	6.29 6.29 6.29	2½-1½ 1½-0½ 0½-1½	b ⁴ P-v ² P°† (127)	2745.098 2731.112 2722.106	A A A	6 5 3	2.07 2.03 2.03	6.57 6.55 6.57	2½-2½ 1½-1½ 1½-2½	a ² D-u ² D°† (140)
							2872.19 2914.608 2882.219	P A A	7 7 7	2.27 2.32 2.27	6.57 6.55 6.55	1½-2½ 0½-1½ 1½-1½	a ² P-u ² D° (141)

Strongest Unclassified Lines of Co I

Air 2955.382 2905.132 2561.280 2560.027 2538.339	A A A A A	(3) 3 2 3 6				Air 2391.369 2390.426 2385.813 2373.370 2332.087	A A A A A	5 4 6 10 15					
2520.908 2505.107 2442.888 2439.495 2436.435	A A A A A	3 3 4 3 4				2328.861 2328.298 2178.59 2077.76 2041.11	A A I I I	6 5 25n 25NN 20					
2435.094 2426.997 2419.122 2417.329 2417.045	A A A A A	3 7 10 3 9				Vac 1992.79 1980.89 1975.67 1968.69	I I I I	20 40N 20 25N					
2412.896* 2403.637 2398.554 2396.779 2395.390	A A A A A	6 6 6 5 7				1961.59 1958.55 1905.87 1901.75 1878.28	I I I I I	25 25 20 20 25					

Co II

I P 16.98 Anal B List B October 1951

REFERENCES

- A N. E. Hager, Jr., unpublished material (May 1951). W L, (I), (T)
 B J. H. Findlay, Phys. Rev. **38**, 5 (1930). W L, I, T
 C W. F. Meggers, see Reference B and unpublished material. W L, I, T
 H. N. Russell, J. Opt. Soc. Am. **40**, 619 (1950). I P

Co II

Co II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Air														
2202.928	A	100	0.00	5.60	4-4	$a^3F - z^3F^{\circ}$	2286.165†	A	150	0.41	5.81	5-6	$a^3F - z^3G^{\circ}\dagger$	
2174.539	A	50	0.00	5.68	4-3	(1)	*2307.84	A	75	0.50	5.84	4-5	(9)	
2111.470	A	50	0.00	5.84	4-5	$a^3F - z^3G^{\circ}\dagger$	2311.602	A	50	0.56	5.90	3-4		
2133.498	A	10	0.12	5.90	3-4	(2)	2314.036	A	40	0.61	5.94	2-3		
2058.818	A	30	0.00	5.99	4-5	$a^3F - z^3G^{\circ}\dagger$	2314.97	A	30	0.64	5.97	1-2		
2065.542	A	50	0.12	6.09	3-4	(3)	2272.26	A	20	0.41	5.84	5-5		
2063.790	A	35	0.20	6.18	2-3		2283.534	A	20	0.50	5.90	4-4		
2011.546	A	5	0.00	6.14	4-4	$a^3F - z^3F^{\circ}\dagger$	2293.415	A	30	0.56	5.94	3-3		
2022.364	A	20	0.12	6.22	3-3	(4)	2301.419	A	15	0.61	5.97	2-2		
2027.047	A	20	0.20	6.29	2-2		2211.411	A	30	0.41	5.99	5-5	$a^3F - z^3G^{\circ}\dagger$	
2000.794	A	10	0.12	6.29	3-2		2205.886	A	10	0.50	6.09	4-4	(10)	
2050.75	B	10	0.12	6.14	3-4		2198.279	A	20	0.56	6.18	3-3		
Vac														
1941.28	B	50	0.00	6.36	4-3	$a^3F - z^3D^{\circ}\dagger$	2173.324	A	60	0.41	6.09	5-4		
1950.098	A	20	0.12	6.45	3-2	(5)	2245.11	A	100	0.50	5.99	4-5		
1957.424	A	30	0.20	6.50	2-1		2232.05	A	50	0.56	6.09	3-4		
1572.645	A	(7)	0.00	7.85	4-3	$a^3F - y^3D^{\circ}\dagger$	2156.955	A	40	0.41	6.14	5-4	$a^3F - z^3F^{\circ}\dagger$	
1595.773	A	(6)	0.12	7.85	3-2	(6)	*2156.701	A	10	0.50	6.22	4-3	(11)	
1605.962	A	(5)	0.20	7.88	2-1		2188.999	A	25	0.50	6.14	4-4		
Air														
2388.930	A	100	0.41	5.58	5-5	$a^3F - z^3F^{\circ}$	1299.574	A	(8)	0.41	9.91	5-4	$a^3F - z^3D^{\circ}\dagger$	
2417.686	A	40	0.50	5.60	4-4	(7)	1306.966	A	(8)	0.50	9.94	4-3	(12)	
2414.069	A	40	0.56	5.68	3-3		1311.856	A	(5)	0.56	9.97	3-2		
2408.770	A	25	0.61	5.73	2-2		1315.419	A	(4)	0.61	10.00	2-1		
2404.187	A	20	0.64	5.78	1-1		1318.180	A	(2)	0.64	10.01	1-0?		
2378.636	A	100	0.41	5.60	5-4		Vac							
2353.479	A	80	0.50	5.68	4-3		2663.518	A	60	1.21	5.84	4-5	$b^3F - z^3G^{\circ}\dagger$	
2386.376	A	50	0.56	5.73	3-2		2694.701	A	25	1.32	5.90	3-4	(13)	
2389.565	A	40	0.61	5.78	2-1		*2714.470	A	15	1.40	5.94	2-3		
2428.310	A	10	0.50	5.58	4-5		2580.372	A	100	1.21	5.99	4-5	$b^3F - z^3G^{\circ}$	
2449.180	A	10	0.56	5.60	3-4		2587.225	A	60	1.32	6.09	3-4	(14)	
2436.991	A	10	0.61	5.68	2-3		2582.247	A	50	1.40	6.18	2-3		
2423.645	A	10	0.64	5.73	1-2		2528.654	A	50	1.21	6.09	4-4		
2326.493	A	25	0.41	5.72	5-4	$a^3F - z^3D^{\circ}$	2541.977	A	50	1.32	6.18	3-3		
*2324.317	A	40	0.50	5.81	4-3	(8)	2485.380	A	10	1.21	6.18	4-3		
2326.150	A	20	0.56	5.87	3-2		2506.474	A	70	1.21	6.14	4-4	$b^3F - z^3F^{\circ}$	
2330.37	C	30	0.61	5.91	2-1		2519.829	A	60	1.32	6.22	3-3	(15)	
2336.246	A	20	0.64	5.92	1-0		2525.015	A	80	1.40	6.29	2-2		
2363.836	A	80	0.50	5.72	4-4		2464.210	A	35	1.21	6.22	4-3		
2353.446	A	60	0.56	5.81	3-3		2486.455	A	35	1.32	6.29	3-2		
2347.406	A	30	0.61	5.87	2-2		2564.050	A	75	1.32	6.14	3-4		
2344.293	A	25	0.64	5.91	1-1		2559.418	A	40	1.40	6.22	2-3		
2393.925	A	10	0.56	5.72	3-4									
2375.201	A	15	0.61	5.81	2-3									
2361.536	A	10	0.64	5.87	1-2									

Co II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2397. 423	A	60	1. 21	6. 36	4-3	$b^1F - z^1D^{\circ}\dagger$	Vac						
2407. 680	A	20	1. 32	6. 45	3-2	(16)	1599. 308	A	(4)	2. 19	9. 91	3-4	$a^1P - z^1D^{\circ}\dagger$
2416. 922	A	30	1. 40	6. 50	2-1		1599. 701	A	(3)	2. 23	9. 94	2-3	(24)
2450. 022	A	35	1. 32	6. 36	3-3		1601. 282	A	(2)	2. 26	9. 97	1-2	
2443. 804	A	40	1. 40	6. 45	2-2								
							1486. 483	A	(9)	2. 19	10. 50	3-3	$a^1P - y^1P^{\circ}$
							1475. 018	A	(2)	2. 26	10. 63	1-1	(25)
							1471. 860	A	(6)	2. 19	10. 58	3-2	
							1468. 356	A	(6)	2. 23	10. 63	2-1	
							1492. 254	A	(6)	2. 23	10. 50	2-3	
							1484. 251	A	(5)	2. 26	10. 58	1-2	
2613. 543	A	(20h)	1. 64	6. 36	2-3	$a^1P - z^1D^{\circ}$	Air						
2574. 908	A	(15h)	1. 65	6. 45	1-2	(17)	2605. 724	A	(20h)	2. 97	7. 71	2-1	$b^1P - z^1S^{\circ}$
2557. 381	A	(12h)	1. 68	6. 50	0-1		2618. 908	A	(20h)	3. 00	7. 71	1-1	(26)
2565. 420	A	(10h)	1. 64	6. 45	2-2		2628. 834	A	(8h)	3. 01	7. 71	0-1	
2545. 083	A	(10h)	1. 65	6. 50	1-1								
2082. 692	A	(60)	1. 64	7. 56	2-2	$a^1P - y^1D^{\circ}\dagger$	2530. 102	A	(25h)	2. 97	7. 85	2-3	$b^1P - y^1D^{\circ}\dagger$
						(18)	2540. 650	A	(25h)	3. 00	7. 85	1-2	(27)
2032. 722	A	(10)	1. 64	7. 71	2-1	$a^1P - z^1S^{\circ}\dagger$	2533. 838	A	(25h)	3. 01	7. 88	0-1	
2038. 675	A	(9)	1. 65	7. 71	1-1	(19)	2528. 255	A	(8h)	2. 97	7. 85	2-2	
							2524. 664	A	(10h)	3. 00	7. 88	1-1	
2614. 372	A	20	2. 19	6. 91	3-2	$a^1P - z^1S^{\circ}$							
2632. 259	A	30	2. 23	6. 91	2-2	(20)	2706. 769	A	50u	5. 81	10. 37	6-5	$z^1G^{\circ} - e^1F\dagger$
2653. 719	A	15	2. 26	6. 91	1-2		2684. 50	B	50u	5. 84	10. 44	5-4	(28)
							2676. 00	A	20u	5. 90	10. 51	4-3	
2291. 98	A	40	2. 19	7. 58	3-4	$a^1P - y^1D^{\circ}$	2669. 919	A	10u	5. 94	10. 57	3-2	
2313. 617	A	8	2. 23	7. 56	2-3	(21)	2666. 82	B	5u	5. 97	10. 60	2-1	
2329. 130	A	10	2. 26	7. 56	1-2								
2299. 76	A	25	2. 19	7. 56	3-3		2707. 526	A	30u	5. 99	10. 55	5-4	$z^1G^{\circ} - e^1F$
2312. 561	A	10	2. 23	7. 56	2-2		2702. 200	A	20u	6. 09	10. 66	4-3	(29)
*2324. 317	A	40	2. 26	7. 57	1-1		2709. 138	A	10u	6. 18	10. 73	3-2	
2298. 746	A	10	2. 19	7. 56	3-2		*2766. 901	A	30u	6. 09	10. 55	4-4	
*2307. 84	A	75	2. 23	7. 57	2-1		2753. 304	A	10u	6. 18	10. 66	3-3	
2193. 605	A	100	2. 19	7. 82	3-3	$a^1P - z^1P^{\circ}$							
2205. 060	A	20	2. 23	7. 82	2-2	(22)							
2205. 515	A	20	2. 26	7. 86	1-1		2793. 935	A	20u	6. 14	10. 55	4-4	$z^1F^{\circ} - e^1F\dagger$
2192. 492	A	50	2. 19	7. 82	3-2		2779. 892	A	20u	6. 22	10. 66	3-3	(30)
2190. 496	A	75	2. 23	7. 86	2-1		2775. 166	A	20u	6. 29	10. 73	2-2	
2206. 215	A	75	2. 23	7. 82	2-3		2727. 989	A	20u	6. 14	10. 66	4-3	
2220. 082	A	15	2. 26	7. 82	1-2								
2180. 614	A	20	2. 19	7. 85	3-2?	$a^1P - y^1D^{\circ}\dagger$	2943. 176	A	30u	6. 36	1	3-4	$z^1D^{\circ} - e^1F\dagger$
2207. 896	A	50	2. 26	7. 85	1-2?	(23)	2930. 484	A	10u	6. 45	1	2-3	(31)

Strongest Unclassified Lines of Co II

Air			Air		
2954. 748	A	(50H)	2280. 44	C	50h
2560. 050	A	30	2273. 732	A	100h
2522. 974	A	(30h)	2266. 538	A	40
2511. 172	A	40	2260. 045	A	50h
2508. 010	A	(30h)	2235. 09	C	40h
2498. 848	A	(35h)	2230. 49	C	100h
2467. 069	A	(35h)	2222. 888	A	30
2446. 038	A	30	2175. 692	A	60
2442. 628	A	50	2174. 002	A	40
2432. 542	A	30	2133. 284	A	30
2420. 735	A	50	2125. 023	A	50
2381. 780	A	40	2109. 600	A	50
2341. 150	A	40			

Co III

I P 33.41 Anal B List C December 1951

REFERENCE

A A. G. Shenstone, unpublished material (December 1951). W L, I, T, I P

Co III

Co III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
939.060	A	30	0.00	13.15	4½-3½	a 4F - z 4D°†	923.075	A	10	2.80	16.18	5½-5½	a 2H - z 2H°
942.388	A	20	0.10	13.20	3½-2½	(1)	925.045	A	8	2.89	16.24	4½-4½	(14)
944.768	A	20	0.18	13.25	2½-1½		893.045	A	15	2.80	16.63	5½-5½	a 2H - y 2H°
946.594	A	20	0.23	13.27	1½-0½		893.095	A	8	2.89	16.72	4½-4½	(15)
936.639	A	30	0.00	13.18	4½-4½	a 4F - z 4F°†	870.007	A	15	2.80	16.99	5½-4½	a 2H - z 2G°
937.310	A	20	0.10	13.27	3½-3½	(2)	874.294	A	10	2.89	17.01	4½-3½	(16)
938.077	A	10	0.18	13.34	2½-2½		858.975	A	15	2.80	17.18	5½-5½	a 2H - z 2H°
938.647	A	5	0.23	13.38	1½-1½		865.898	A	0	2.89	17.15	4½-4½	(17)
801.493	A	30	0.00	15.40	4½-5½	a 4F - z 4G°†	844.097	A	20	2.80	17.43	5½-5½	a 2H - w 2H°†
805.345	A	20	0.10	15.43	3½-4½	(3)	848.088	A	30	2.89	17.45	4½-4½	(18)
807.910	A	15	0.18	15.46	2½-3½		839.284	A	30	2.80	17.51	5½-6½	a 2H - y 2I°
809.706	A	15	0.23	15.48	1½-2½		844.310	A	8	2.89	17.51	4½-5½	(19)
790.197	A	50	0.00	15.62	4½-3½	a 4F - y 4D°†							
785.883	A	15	0.10	15.81	3½-2½	(4)							
787.562	A	8	0.18	15.85	2½-1½								
789.447	A	30	0.23	15.87	1½-0½?								
771.868	A	20	0.00	15.99	4½-5½	a 4F - y 4G°†	1928.570	A	500	5.73	12.13	4½-4½	a 4D - z 4D°
776.688	A	20	0.10	16.00	3½-4½	(5)	1940.147	A	500	5.80	12.17	3½-3½	(20)
779.683	A	20	0.18	16.01	2½-3½		1945.234	A	200	5.85	12.20	2½-2½	
781.983	A	15	0.23	16.02	1½-2½		1947.626	A	5	5.89	12.23	1½-1½	
*762.775	A	50	0.00	16.18	4½-5½	a 4F - x 4G°†	1948.655	A	100	5.91	12.24	0½-0½	
767.703	A	15	0.10	16.18	3½-4½	(6)	1919.120	A	500	5.73	12.17	4½-3½	
768.458	A	15	0.18	16.24	2½-3½		1929.756	A	300	5.80	12.20	3½-2½	
769.128	A	10	0.23	16.28	1½-2½		1936.933	A	300	5.85	12.23	2½-1½	
*762.775	A	50	0.00	16.18	4½-4½		1942.369	A	200	5.89	12.24	1½-0½	
764.866	A	15	0.10	16.24	3½-3½		1949.805	A	200	5.80	12.13	3½-4½	
766.667	A	10h	0.18	16.28	2½-2½		1955.793	A	200	5.85	12.17	2½-3½	
758.212	A	20	0.00	16.28	4½-4½	a 4F - x 4F°†	1956.011	A	200	5.89	12.20	1½-2½	
760.825	A	30	0.10	16.33	3½-3½	(7)	1953.942	A	500	5.91	12.23	0½-1½	
763.131	A	25	0.18	16.36	2½-2½		1760.354	A	5000	5.73	12.75	4½-5½	a 4D - z 4F°
764.959	A	20	0.23	16.37	1½-1½		1773.568	A	5000	5.80	12.76	3½-4½	(21)
1095.443	A	15	1.88	13.15	2½-3½	a 2P - z 2D°†	1782.966	A	2000	5.85	12.78	2½-3½	
1092.581	A	10	1.90	13.20	1½-2½	(8)	1789.070	A	1000	5.89	12.79	1½-2½	
1093.066	A	5	1.95	13.25	0½-1½		1792.410	A	300	5.91	12.80	0½-1½	
878.543	A	10	2.10	16.15	4½-4½	a 2G - y 2G°	1755.979	A	500	5.73	12.76	4½-4½	
880.950	A	10	2.19	16.21	3½-3½	(9)	1769.957	A	500	5.80	12.78	3½-3½	
838.133	A	25	2.10	16.83	4½-3½	a 2G - y 2F°	1780.046	A	2000	5.85	12.79	2½-2½	
844.866	A	10	2.19	16.81	3½ 2½	(10)	1787.082	A	1000	5.89	12.80	1½-1½	
818.600	A	20	2.10	17.18	4½-5½	a 2G - x 2H°†	1791.277	A	500	5.91	12.80	0½-0½	
825.403	A	15	2.19	17.15	3½-4½	(11)	1767.084	A	30	5.80	12.79	3½-2½	
810.502	A	15	2.10	17.33	4½-4½	a 2G - w 2G°	1778.091	A	100	5.85	12.80	2½-1½	
815.555	A	25	2.19	17.33	3½-3½	(12)	1785.965	A	50	5.89	12.80	1½-0½	
808.612	A	5	2.10	17.36	4½-3½	a 2G - x 2F°	1707.348	A	1000	5.73	12.96	4½-3½	a 4D - z 4P°
812.869	A	10	2.19	17.38	3½-2½	(13)	1696.008	A	1000	5.80	13.08	3½-2½	(22)
							1689.858	A	100	5.85	13.16	2½-1½	
							1723.970	A	500	5.80	12.96	3½-3½	
							1707.951	A	500	5.85	13.08	2½-2½	
							1697.988	A	800	5.89	13.16	1½-1½	
							1736.312	A	200	5.85	12.96	2½-3½	
							1716.251	A	200	5.89	13.08	1½-2½	
							1702.790	A	500	5.91	13.16	0½-1½	

Co III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1665.269	A	50	5.73	13.15	4½-3½	a 'D - z 'D°
1668.032	A	5	5.80	13.20	3½-2½	(23)
1681.074	A	10	5.80	13.15	3½-3½	
1679.578	A	20	5.85	13.20	2½-2½	
1677.901	A	15	5.89	13.25	1½-1½	
1970.054	A	300	6.88	13.15	3½-3½	a 'D - z 'D°
1977.031	A	200	6.96	13.20	2½-2½	(24)
1980.113	A	200	7.01	13.25	1½-1½	
1981.345	A	100	7.04	13.27	0½-0½	
1952.158	A	200	6.88	13.20	3½-2½	
1963.743	A	100	6.96	13.25	2½-1½	
1971.889	A	100	7.01	13.27	1½-0½	
1995.397	A	50	6.96	13.15	2½-3½	
1993.625	A	100	7.01	13.20	1½-2½	
*1989.645	A	100	7.04	13.25	0½-1½	
1959.414	A	500	6.88	13.18	3½-4½	a 'D - z 'F°†
1954.791	A	300	6.96	13.27	2½-3½	(25)
1950.911	A	400	7.01	13.34	1½-2½	
1946.792	A	300	7.04	13.38	0½-1½	
1930.479	A	50	6.88	13.27	3½-3½	
1935.023	A	100	6.96	13.34	2½-2½	
1937.661	A	100	7.01	13.38	1½-1½	
1830.093	A	1000	6.88	13.63	3½-2½	a 'D - z 'P°
1831.916	A	500	6.96	13.70	2½-1½	(26)
1835.255	A	100	7.01	13.74	1½-0½	
1851.937	A	200	6.96	13.63	2½-2½	
1846.157	A	300	7.01	13.70	1½-1½	
1843.443	A	100	7.04	13.74	0½-0½	
1866.497	A	20	7.01	13.63	1½-2½	
1854.393	A	400?	7.04	13.70	0½-1½	
Air						
2811.750	A	20	8.76	13.15	2½-3½	b 'P - z 'D°†
2888.313	A	10	8.93	13.20	1½-2½	(27)
2933.292	A	5	9.04	13.25	0½-1½	
Vac						
1798.064	A	500	8.76	15.62	2½-3½	b 'P - y 'D°†
1793.924	A	200	8.93	15.81	1½-2½	(28)
1811.317	A	100	9.04	15.85	0½-1½	
1751.854	A	200	8.76	15.80	2½-3½	b 'P - x 'D°†
						(29)
*1881.702	A	1000	8.84	15.40	6½-5½	a 'H - z 'G°†
1881.867	A	300	8.87	15.43	5½-4½	(30)
*1881.702	A	1000	8.90	15.46	4½-3½	
1883.286	A	200	8.92	15.48	3½-2½	
1863.826	A	2000	8.84	15.47	6½-6½	a 'H - z 'H°
1871.870	A	500	8.87	15.47	5½-5½	(31)
1874.822	A	300	8.90	15.48	4½-4½	
1871.952	A	300	8.92	15.52	3½-3½	
1863.134	A	5	8.84	15.47	6½-5½	
1867.490	A	100	8.87	15.48	5½-4½	
1865.424	A	100	8.90	15.52	4½-3½	
1872.575	A	300	8.87	15.47	5½-6½	
1879.244	A	300	8.90	15.47	4½-5½	
1881.427	A	150	8.92	15.48	3½-4½	
1835.000	A	2000	8.84	15.57	6½-7½	a 'H - z 'I°†
1831.439	A	1000	8.87	15.61	5½-6½	(32)
1837.630	A	500	8.90	15.62	4½-5½	
1852.645	A	15d	8.92	15.58	3½-4½	
1823.079	A	1000	8.84	15.61	6½-6½	
1830.581	A	300	8.87	15.62	5½-5½	
1846.514	A	100	8.90	15.58	4½-4½	

Co III—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1819.261	A	30	8.90	15.68	4½-4½	a 'H - z 'G°†
1816.617	A	20	8.92	15.72	3½-3½	(33)
1825.464	A	100	8.92	15.68	3½-4½	
1792.144	A	100	8.87	15.76	5½-6½	a 'H - z 'I°
						(34)
1726.134	A	100	8.84	15.99	6½-5½	a 'H - y 'G°†
1732.545	A	200	8.87	16.00	5½-4½	(35)
1735.400	A	50	8.90	16.01	4½-3½	
1739.833	A	30	8.92	16.02	3½-2½	
1645.986	A	30	8.84	16.34	6½-6½	a 'H - y 'H°†
1649.265	A	200?	8.87	16.36	5½-5½	(36)
*1652.791	A	10	8.90	16.37	4½-4½	
Air						
3010.921	A	20	9.05	13.15	4½-3½	b 'F - z 'D°
2991.915	A	20	9.03	13.20	3½-2½	(37)
2978.028	A	10	9.10	13.25	2½-1½	
2971.350	A	5	9.12	13.27	1½-0½	
Vac						
1942.497	A	100	9.05	15.40	4½-5½	b 'F - z 'G°
1942.796	A	100	9.08	15.43	3½-4½	(38)
1941.730	A	100	9.10	15.46	2½-3½	
1941.460	A	50	9.12	15.48	1½-2½	
1933.250	A	50	9.05	15.43	4½-4½	
1934.734	A	50	9.08	15.46	3½-3½	
1936.392	A	20	9.10	15.48	2½-2½	
1925.260	A	20h	9.05	15.46	4½-3½	
1877.464	A	50	9.05	15.62	4½-3½	b 'F - y 'D°†
*1886.469	A	50	9.08	15.62	3½-3½	(39)
1839.636	A	20	9.10	15.81	2½-2½	
1861.775	A	1000	9.05	15.68	4½-4½	b 'F - y 'F°
1874.355	A	100	9.08	15.66	3½-3½	(40)
*1881.702	A	1000	9.10	15.66	2½-2½	
1882.323	A	150	9.12	15.68	1½-1½	
1865.456	A	100	9.05	15.66	4½-3½	
1875.094	A	200	9.08	15.66	3½-2½	
1877.544	A	50	9.10	15.68	2½-1½	
1870.634	A	75	9.08	15.68	3½-4½	
1880.912	A	50	9.10	15.66	2½-3½	
*1886.469	A	50	9.12	15.66	1½-2½	
1859.510	A	50	9.08	15.72	3½-3½	b 'F - z 'G°
*1850.780	A	20	9.05	15.72	4½-3½	(41)
1868.796	A	30	9.08	15.68	3½-4½	
1827.094	A	400	9.05	15.80	4½-3½	b 'F - x 'D°†
1818.684	A	200	9.03	15.87	3½-2½	(42)
1815.596	A	200	9.10	15.90	2½-1½	
1815.686	A	200	9.12	15.92	1½-0½	
1835.617	A	100	9.08	15.80	3½-3½	
1824.874	A	100	9.10	15.87	2½-2½	
1820.064	A	100	9.12	15.90	1½-1½	
1777.145	A	1000	9.05	15.99	4½-5½	b 'F - y 'G°
1784.055	A	500	9.08	16.00	3½-4½	(43)
1786.342	A	200	9.10	16.01	2½-3½	
1789.373	A	100	9.12	16.02	1½-2½	
Air						
3305.370	A	20	9.45	13.18	5½-4½	a 'G - z 'F°
3287.630	A	20	9.52	13.27	4½-3½	(44)
3259.676	A	20	9.55	13.34	3½-2½	
3232.726	A	10	9.56	13.38	2½-1½	

Co III—Continued

Co III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1978. 948	A	50	9. 45	15. 68	5½-4½	a 'G - z 'G°	1927. 740	A	200	9. 74	16. 15	3½-4½	a 'F - y 'G°†
1992. 158	A	10	9. 52	15. 72	4½-3½	(45)	1928. 490	A	100	9. 81	16. 21	2½-3½	(61)
1954. 876	A	100	9. 45	15. 76	5½-6½	a 'G - z 'I°	1900. 763	A	50	9. 74	16. 24	3½-4½	a 'F - z 'H°
1955. 505	A	30	9. 52	15. 83	4½-5½	(46)							(62)
*1832. 201	A	200	9. 45	16. 18	5½-5½	a 'G - x 'G°	1743. 311	A	30	9. 74	16. 83	3½-3½	a 'F - y 'F°
1845. 074	A	100	9. 55	16. 24	3½-3½	(47)	1763. 533	A	15	9. 81	16. 81	2½-2½	(63)
1837. 840	A	100	9. 56	16. 28	2½-2½								
*1832. 201	A	200	9. 45	16. 18	5½-4½		Air						
1836. 200	A	200	9. 52	16. 24	4½-3½		2090. 50	A	10	10. 17	16. 07	4½-3½	b 'G - z 'F°
1834. 840	A	50	9. 55	16. 28	3½-2½		2105. 17	A	3	10. 24	16. 10	3½-2½	(64)
1806. 096	A	10	9. 45	16. 28	5½-4½	a 'G - x 'F°	2053. 108	A	200	10. 17	16. 18	4½-5½	b 'G - z 'H°
1813. 044	A	50	9. 52	16. 33	4½-3½	(48)	2056. 148	A	100	10. 24	16. 24	3½-4½	(65)
1814. 683	A	100	9. 55	16. 36	3½-2½		Vac						
1814. 219	A	100	9. 56	16. 37	2½-1½		1910. 840	A	300	10. 17	16. 63	4½-5½	b 'G - y 'H°
1825. 947	A	400	9. 52	16. 28	4½-4½		1905. 354	A	300	10. 24	16. 72	3½-4½	(66)
1821. 688	A	300	9. 55	16. 33	3½-3½		*1854. 393	A	400	10. 17	16. 83	4½-3½	b 'G - y 'F°
1817. 626	A	100	9. 56	16. 36	2½-2½		1879. 385	A	200	10. 24	16. 81	3½-2½	(67)
1790. 258	A	500	9. 45	16. 34	5½-6½	a 'G - y 'H°†	1808. 384	A	300	10. 17	16. 99	4½-4½	b 'G - x 'G°
1805. 535	A	500	9. 52	16. 36	4½-5½	(49)	1821. 766	A	300	10. 24	17. 01	3½-3½	(68)
1811. 466	A	400	9. 55	16. 37	3½-4½		1761. 367	A	10	10. 17	17. 18	4½-5½	b 'G - z 'H°
1813. 186	A	300	9. 56	16. 37	2½-3½		1785. 705	A	5	10. 24	17. 15	3½-4½	(69)
Air													
2013. 881	A	200	9. 56	15. 68	5½-4½	b 'H - z 'G°	Air						
2011. 613	A	200	9. 58	15. 72	4½-3½	(50)	2193. 25	A	8	10. 55	16. 18	6½-5½	a 'I - z 'H°
Vac							2172. 26	A	5	10. 56	16. 24	5½-4½	(70)
*1989. 645	A	100	9. 56	15. 76	5½-6½	b 'H - z 'I°†	Vac						
1974. 883	A	200	9. 58	15. 83	4½-5½	(51)	1863. 467	A	200	10. 55	17. 18	6½+5½	a 'I - x 'H°
1873. 014	A	1	9. 56	16. 15	5½-4½	b 'H - y 'G°	1872. 532	A	200	10. 56	17. 15	5½-4½	(71)
1880. 449	A	30	9. 58	16. 15	4½-4½	(52)	1794. 804	A	100	10. 55	17. 43	6½-5½	a 'I - w 'H°
1864. 187	A	400	9. 56	16. 18	5½-5½	b 'H - z 'H°	1791. 153	A	300	10. 56	17. 45	5½-4½	(72)
1854. 763	A	300	9. 58	16. 24	4½-4½	(53)	1796. 200	A	10	10. 56	17. 43	5½-5½	
*1862. 660	A	100	9. 56	16. 18	5½-5½	b 'H - x 'G°	1773. 215	A	500	10. 55	17. 51	6½-6½	a 'I - y 'I°
1870. 012	A	30	9. 58	16. 18	4½-4½	(54)	1774. 318	A	500	10. 56	17. 51	5½-5½	(73)
*1862. 660	A	100	9. 56	16. 18	5½-4½		1779. 577	A	10	10. 56	17. 51	5½-6½	
1853. 266	A	20d	9. 58	16. 24	4½-3½		Air						
1835. 687	A	20?	9. 56	16. 28	5½-4½	b 'H - x 'F°	2452. 16	A	10	10. 65	15. 68	4½-4½	c 'G - z 'G°
1829. 674	A	300	9. 58	16. 33	4½-3½	(55)	2438. 76	A	3	10. 66	15. 72	3½-3½	(74)
1819. 330	A	200	9. 56	16. 34	5½-6½	b 'H - y 'H°	Vac						
1822. 046	A	200	9. 58	16. 36	4½-5½	(56)	1892. 011	A	150	10. 65	17. 18	4½-5½	c 'G - x 'H°
1815. 063	A	20	9. 56	16. 36	5½-5½		1901. 357	A	300	10. 66	17. 15	3½-4½	(75)
1745. 674	A	400	9. 56	16. 63	5½-5½	b 'H - y 'H°	1899. 795	A	50	10. 65	17. 15	4½-4½	
1730. 670	A	250	9. 58	16. 72	4½-4½	(57)	1849. 299	A	200	10. 65	17. 33	4½-4½	c 'G - w 'G°
1659. 757	A	10	9. 56	16. 99	5½-4½	b 'H - x 'G°	1849. 932	A	200	10. 66	17. 33	3½-3½	(76)
1661. 422	A	10	9. 58	17. 01	4½-3½	(58)	*1850. 780	A	20	10. 66	17. 33	3½-4½	
1588. 642	A	10	9. 56	17. 33	5½-4½	b 'H - w 'G°	1839. 535	A	50	10. 65	17. 36	4½-3½	c 'G - x 'F°
1593. 372	P		9. 58	17. 33	4½-3½	(59)	*1836. 200	A	200	10. 66	17. 38	3½-2½	(77)
1950. 961	A	50	9. 74	16. 07	3½-3½	a 'F - z 'F°	1821. 232	A	400	10. 65	17. 43	4½-5½	c 'G - w 'H°†
1961. 450	A	50	9. 81	16. 10	2½-2½	(60)	1817. 518	A	100	10. 66	17. 45	3½-4½	(78)

Strongest Unclassified Lines of Co III

Vac						Vac							
1895. 368	A	500				1849. 464	A	300					
1886. 742	A	200				1847. 825	A	200					
1850. 503	A	300				1847. 300	A	200					

NICKEL, Z=28

Ni I

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Ni I

Ni I

I A	Ref	Int	E P		J	Multiplet (No)		I A	Ref	Int	E P		J	Multiplet (No)
			Low	High							Low	High		
Air								Air						
2805.078	A	(3)	0.00	4.40	4-3	$a^3F - y^1F^o$		2310.952	A	100	0.00	5.34	4-4	$a^3F - w^1F^o$
2914.006	A	(2)	0.16	4.40	3-3	(1)		2312.335	A	50	0.16	5.50	3-3	(10)
*2991.106	A	4	0.27	4.40	2-3			2313.976	A	100	0.27	5.61	2-2	
2834.547	A	(3)	0.16	4.52	3-2	$a^3F - y^1D^o$		2243.22	C	(tr)	0.00	5.50	4-3	
2907.457	A	(3)	0.27	4.52	2-2	(2)		2267.554	A	2	0.16	5.61	3-2	
2476.875	A	3	0.00	4.98	4-3	$a^3F - 1^o$		2384.390	A	6	0.16	5.34	3-4	
2561.424	A	(1)	0.16	4.98	3-3	(3)		2360.633	A	10	0.27	5.50	2-3	
2553.373	A	(1)	0.16	5.00	3-2	$a^3F - 2^o$		2423.653	A	4	0.27	5.37	2-1	$a^3F - y^1P^o$
						(4)							(11)	
2347.507	A	15	0.00	5.26	4-4	$a^3F - x^3F^o$		2346.628	A	4	0.16	5.42	3-2	$a^3F - x^1D^o$
2362.070	A	10	0.16	5.39	3-3	(5)		2396.378	A	3	0.27	5.42	2-2	(12)
2289.982	A	20	0.00	5.39	4-3			2261.424	A	10	0.00	5.46	4-3	$a^3F - x^1F^o$
2423.322	A	4	0.16	5.26	3-4			2331.698	A	2	0.16	5.46	3-3	(13)
								2380.812	A	2	0.27	5.46	2-3	
2345.539	A	30	0.00	5.26	4-3	$a^3F - x^3D^o$		2254.810	A	8	0.00	5.47	~~4-~~	$a^3F - 3^o$
2401.839	A	20	0.16	5.30	3-2	(6)		2324.645	A	(2)	0.16	5.47	3-	(14)
2421.223	A	7	0.16	5.26	3-3									
2453.984	A	4	0.27	5.30	2-2			2212.149	A	2	0.16	5.74	3-2	$a^3F - x^1P^o$
								2221.939	A	5	0.27	5.83	2-1	(15)
2419.310	A	20	0.16	5.27	3-2	$a^3F - y^1P^o$		2125.62	C	5	0.00	5.81	4-3	$a^3F - v^1D^o$
2472.065	A	6	0.27	5.27	2-1	(7)		2182.38	C	7	0.16	5.82	3-2	(16)
2472.224	A	(1)	0.27	5.27	2-2			2211.292	A	2	0.27	5.85	2-1	
								2187.60	C	(1)	0.16	5.81	3-3	
2337.484	A	50	0.00	5.28	4-3	$a^3F - w^3D^o \dagger$		2225.35	C	(1)	0.27	5.82	2-2	
2317.159	A	50	0.16	5.49	3-2	(8)								
2329.963	A	50	0.27	5.57	2-1			2052.04	C	(12)	0.00	6.01	4-4	$a^3F - v^1F^o$
2412.640	A	10	0.16	5.28	3-3			2111.73	C	(5)	0.16	6.01	3-3	(17)
2365.657	A	(1)	0.27	5.49	2-2			2090.42	C	(2)	0.27	6.18	2-2	
2465.263	A	2	0.27	5.28	2-3			2053.91	C	(1)	0.00	6.01	4-3	
								2052.45	C	(2)	0.16	6.18	3-2	
2320.026	A	100	0.00	5.32	4-5	$a^3F - y^1G^o \dagger$		2109.79	C	(2)	0.16	6.01	3-4	
2325.794	A	50	0.16	5.47	3-4	(9)		2151.93	C	3	0.27	6.01	2-3	
2321.377	A	60	0.27	5.59	2-3									
2255.873	A	(2)	0.00	5.47	4-4			2095.75	C	(4)	0.16	6.05	3-3	$a^3F - 6^o \dagger$
2274.662	A	(1u)	0.16	5.59	3-3			2135.34	C	(3)	0.27	6.05	2-3	(18)

Ni I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2026. 62	C	(20)	0.00	6.09	4-3	$a^1F - u^1D^o$ (19)
2089. 09	C	(4)	0.16	6.07	3-2	
2055. 50	C	(15)	0.27	6.28	2-1	
2082. 87	C	(8)	0.16	6.09	3-3	
2128. 41	C	3	0.27	6.07	2-2	
Vac						
1994. 29	C	(2)	0.00	6.19	4-3	$a^1F - w^1F^o$ (20)
Air						
2072. 26	C	(3)	0.27	6.23	2-1	$a^1F - x^1P^o$ (21)
2025. 40	C	(10)	0.16	6.26	3-2	$a^1F - w^1D^o$ (22)
2062. 37	C	(5)	0.27	6.26	2-2	
Vac						
1968. 90	C	(1)	0.00	6.27	4-4	$a^1F - u^1F^o \dagger$ (23)
Air						
2007. 69	C	(4)	0.16	6.31	3-3	
2034. 90	C	(5)	0.27	6.34	2-2	
3002. 484	A	100R	0.03	4.14	3-3	$a^1D - y^1D^o$ (24)
3003. 622	A	60R	0.11	4.22	2-2	
3057. 638	A	50R	0.21	4.25	1-1	
2943. 912	A	25	0.03	4.22	3-2	
2981. 645	A	20R	0.11	4.25	2-1	
3064. 619	A	25R	0.11	4.14	2-3	
3080. 754	A	20R	0.21	4.22	1-2	
2821. 291	A	15	0.03	4.40	3-3	$a^1D - y^1F^o$ (25)
2876. 090	A	(2)	0.11	4.40	2-3	
2746. 743	A	5	0.03	4.52	3-2	$a^1D - y^1D^o$ (26)
2798. 651	A	10	0.11	4.52	2-2	
2865. 498	A	1	0.21	4.52	1-2	
2489. 507	A	(1)	0.03	4.98	3-3	$a^1D - 1^o$ (27)
2532. 076	A	(1)	0.11	4.98	2-3	
2524. 208	A	5	0.11	5.00	2-2	$a^1D - 2^o$ (28)
2578. 465	A	(1)	0.21	5.00	1-2	
2358. 853	A	8	0.03	5.26	3-4	$a^1D - x^1F^o$ (29)
2337. 087	A	(1)	0.11	5.39	2-3	
2300. 774	A	20	0.03	5.39	3-3	
2358. 864	A	10	0.03	5.26	3-3	$a^1D - x^1D^o$ (30)
2376. 016	A	7	0.11	5.30	2-2	
2338. 493	A	2	0.03	5.30	3-2	
2424. 027	A	5	0.21	5.30	1-2	
2355. 050	A	10	0.03	5.27	3-2	$a^1D - y^1P^o$ (31)
2392. 961	A	15	0.11	5.27	2-1	
2393. 109	A	(1)	0.11	5.27	2-2	
2441. 665	A	(2)	0.21	5.27	1-1	
2441. 817	A	10	0.21	5.27	1-2	
2348. 734	A	2	0.03	5.28	3-3	$a^1D - w^1D^o$ (32)
2293. 114	A	5	0.11	5.49	2-2	
2302. 973	B	10	0.21	5.57	1-1	
2258. 145	A	6	0.03	5.49	3-2	
2259. 562	A	7	0.11	5.57	2-1	
2386. 585	A	10	0.11	5.28	2-3	
2337. 814	A	(1)	0.21	5.49	1-2	
2266. 348	A	3	0.03	5.47	3-4	$a^1D - y^1G^o$ (33)
2251. 484	A	3	0.11	5.59	2-3	
2217. 77	C	(3)	0.03	5.59	3-3	

Ni I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2321. 953	A	(1)	0.03	5.34	3-4	$a^1D - w^1F^o$ (34)
2288. 396	A	4	0.11	5.50	2-3	
2287. 315	A	(1)	0.21	5.61	1-2	
2253. 565	A	(1)	0.03	5.50	3-3	
2244. 464	B	(1)	0.11	5.61	2-2	
2211. 03	C	(3)	0.03	5.61	3-2	
2271. 951	A	6	0.03	5.46	3-3	$a^1D - x^1F^o$ (35)
2307. 351	A	3	0.11	5.46	2-3	
2158. 31	C	30	0.03	5.74	3-2	$a^1D - x^1P^o$ (36)
2157. 83	C	10	0.11	5.83	2-1	
2174. 480	A	10	0.21	5.89	1-0?	
2190. 223	A	15	0.11	5.74	2-2	
2197. 347	A	20	0.21	5.83	1-1	
2230. 955	A	3	0.21	5.74	1-2	
2134. 93	C	20	0.03	5.81	3-3	$a^1D - y^1D^o$ (37)
2161. 04	C	6	0.11	5.82	2-2	
2186. 94	C	(2)	0.21	5.85	1-1	
2129. 96	C	10	0.03	5.82	3-2	
2147. 80	C	40	0.11	5.85	2-1	
2166. 15	C	5	0.11	5.81	2-3	
2220. 71	C	4	0.21	5.82	1-2	
2121. 40	C	(8)	0.03	5.84	3-2	$a^1D - 4^o \dagger$ (38)
2152. 23	C	(3)	0.11	5.84	2-2	
2060. 76	C	(1)	0.03	6.01	3-4	$a^1D - y^1F^o$ (39)
2091. 69	C	(0)	0.11	6.01	2-3	
2068. 62	C	(4)	0.21	6.18	1-2	
2033. 56	C	(2?)	0.11	6.18	2-2	
2059. 92	C	(12)	0.03	6.02	3-2	$a^1D - w^1P^o$ (40)
2060. 20	C	(8)	0.11	6.10	2-1	
2064. 39	C	(8)	0.21	6.19	1-0	
2088. 98	C	(4)	0.11	6.02	2-2	
2085. 37	C	(4)	0.11	6.03	2-	$a^1D - 5^o$ (41)
2122. 25	C	(1)	0.21	6.03	1-	
2047. 35	C	(10)	0.03	6.05	3-3	$a^1D - 6^o$ (42)
2076. 07	C	(2)	0.11	6.05	2-3	
2035. 07	C	(20)	0.03	6.09	3-3	$a^1D - u^1D^o$ (43)
2069. 52	C	(8)	0.11	6.07	2-2	
2034. 44	C	(10)	0.21	6.28	1-1	
2000. 49	C	(1)	0.11	6.28	2-1	
2063. 42	C	(10)	0.11	6.09	2-3	
2105. 85	C	(1)	0.21	6.07	1-2	
2001. 83	C	(4)	0.03	6.19	3-3	$a^1D - w^1F^o$ (44)
2029. 29	C	(3)	0.11	6.19	2-3	
2016. 36	C	(tr)	0.11	6.23	2-1	$a^1D - x^1P^o$ (45)
2050. 84	C	(5)	0.21	6.23	1-1	
2007. 01	C	(7)	0.11	6.26	2-2	$a^1D - w^1D^o$ (46)
2041. 16	C	(2)	0.21	6.26	1-2	
Vac						
1976. 87	C	(3 N)	0.03	6.27	3-4	$a^1D - u^1F^o$ (47)
1990. 25	C	(4 N)	0.11	6.31	2-3	
Air						
2014. 25	C	(12)	0.21	6.34	1-2	
Vac						
1963. 85	C	(1)	0.03	6.31	3-3	
1981. 61	C	(2)	0.11	6.31	2-2	

Ni 1—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2705.463	A	(1)	0.42	4.98	2-3	$a^1D - 1^\circ$ (48)	Air 2095.13 2085.57	C C	(4) (1)	0.42 0.42	6.31 6.34	2-3 2-2	$a^1D - u^1F^\circ$ (65)
2696.484	A	(2)	0.42	5.00	2-2	$a^1D - 2^\circ$ (49)	2983.426 2973.730	A A	4 (1)	1.67 1.67	5.81 5.82	2-3 2-2	$b^1D - v^1D^\circ$ (66)
2484.028	A	5	0.42	5.39	2-3	$a^1D - x^1F^\circ$ (50)	2844.047	A	(2)	1.67	6.01	2-3	$b^1D - v^1F^\circ$ (67)
2549.532	A	(2)	0.42	5.26	2-3	$a^1D - x^1D^\circ$ (51)	2838.951	A	(2)	1.67	6.02	2-2	$b^1D - w^1P^\circ$ (68)
2528.048	A	(1)	0.42	5.30	2-2	$a^1D - y^1P^\circ$ (52)	2803.140 2678.026	A A	(1) (3)	1.67 1.67	6.07 6.28	2-2 2-1	$b^1D - u^1D^\circ$ (69)
2547.409	A	(1)	0.42	5.27	2-2	$a^1D - w^1D^\circ$ (53)	2706.521	A	(3)	1.67	6.23	2-1	$b^1D - x^1P^\circ$ (70)
2540.019	A	1?	0.42	5.28	2-3	$a^1D - y^1G^\circ$ (54)	2689.680	A	(4)	1.67	6.26	2-2	$b^1D - w^1D^\circ$ (71)
2434.412	A	2	0.42	5.49	2-2	$a^1D - w^1F^\circ$ (55)	2643.146	A	(2)	1.67	6.34	2-2	$b^1D - u^1F^\circ$ (72)
2396.630	A	3	0.42	5.57	2-1	$a^1D - x^1D^\circ$ (56)	2797.996	A	(2)	1.82	6.23	0-1	$a^1S - x^1P^\circ$ (73)
2387.549	A	4	0.42	5.59	2-3	$a^1D - x^1F^\circ$ (57)	3017.947 2969.190	A A	(1) (1)	1.93 1.94	6.02 6.10	2-2 1-1	$a^1P - w^1P^\circ$ (74)
2429.092	A	(1)	0.42	5.50	2-3	$a^1D - x^1P^\circ$ (58)	2958.283 2905.746	A A	(1) (1)	1.93 1.94	6.10 6.19	2-1 1-0	
2379.720	A	(1)	0.42	5.61	2-2	$a^1D - w^1P^\circ$ (59)	*3029.293	A	3	1.94	6.02	1-2	
2466.960	A	(1)	0.42	5.42	2-2	$a^1D - 5^\circ$ (60)	*2991.106	A	4	1.93	6.05	2-3	$a^1P - 6^\circ$ (75)
2450.465	A	(1)	0.42	5.46	2-3?	$a^1D - 6^\circ$ (61)	2868.739 2878.998	A A	(1) (3)	1.93 1.94	6.23 6.23	2-1 1-1	$a^1P - x^1P^\circ$ (76)
2318.770	A	(1)	0.42	5.74	2-2	$a^1D - u^1D^\circ$ (62)	2849.822	A	(1)	1.93	6.26	2-2	$a^1P - w^1D^\circ$ (77)
2173.535	A	(4)	0.42	6.10	2-1	$a^1D - x^1P^\circ$ (63)	2930.908	A	(1)	3.18	7.39	4-5	$z^1D^\circ - g^1F$ (78)
2201.59	C	8	0.42	6.03	2-	$a^1D - w^1D^\circ$ (64)	2814.354	A	(3)	3.37	7.75	6-7	$z^1G^\circ - f^1H$ (79)
2191.21	C	(3)	0.42	6.05	2-3								
2183.91	C	2	0.42	6.07	2-2								
2107.21	C	(0)	0.42	6.28	2-1								
2124.80	C	3	0.42	6.23	2-1								
2114.43	C	(4)	0.42	6.26	2-2								

Strongest Unclassified Lines of Ni I

Air					Air					
2949. 218	B	(3)			2450. 975	A	(8)			
2802. 270	A	(3)			2385. 011	A	3			
2501. 128	B	3			2244. 55	C	3			
2491. 184	B	4			2130. 78	C	(3)			
2490. 689	B	4			2095. 53	C	(3)			
2488. 149	B	6			2069. 04	C	(10)			
2472. 917	B	4								

Ni II

I P 18.07 Anal B List B October 1949

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Ni II

Ni II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1939.71	E	(4)	0.00	6.36	2½-3½	a ²D - z ²D°†	2165.55	B	40R	1.04	6.73	4½-4½	a ⁴F - z ⁴F°
1896.16	F	5	0.00	6.51	2½-2½	(1)	2169.10	B	30R	1.15	6.84	3½-3½	(13)
							2175.16	B	25R	1.25	6.92	2½-2½	
1804.48	F	20	0.00	6.84	2½-3½	a ²D - z ⁴F°	2184.61	B	25R	1.32	6.97	1½-1½	
1832.68	E	(2)	0.19	6.92	1½-2½	(2)	2125.89	C	4	1.04	6.84	4½-3½	
							2138.60	C	10	1.15	6.92	3½-2½	
1773.96	F	10	0.00	6.96	2½-3½	a ²D - z ²G°	2158.73	B	8	1.25	6.97	2½-1½	
						(3)	2210.38	B	20R	1.15	6.73	3½-4½	
							2206.71	B	25R	1.25	6.84	2½-3½	
							2201.41	B	20R	1.32	6.92	1½-2½	
1751.92	F	50	0.00	7.05	2½-3½	a ²D - z ²F°							
1754.81	F	20	0.19	7.22	1½-2½	(4)	2131.27	C	3	1.04	6.83	4½-4½	a ⁴F - z ²G°
1709.60	F	100	0.00	7.22	2½-2½		2125.12	C	8	1.15	6.96	3½-3½	(14)
							2083.65	C	2	1.04	6.96	4½-3½	
1741.56	F	30	0.00	7.09	2½-2½	a ²D - z ²D°	2174.67	B	30R	1.15	6.83	3½-4½	
1748.30	F	20	0.19	7.25	1½-1½	(5)	2161.21	B	10	1.25	6.96	2½-3½	
1703.41	F	10	0.00	7.25	2½-1½								
1788.50	F	200	0.19	7.09	1½-2½		2053.30	C	5	1.04	7.05	4½-3½	a ⁴F - z ²F°
							2033.42	C	3	1.15	7.22	3½-2½	(15)
1467.85	E	(3)	0.00	8.41	2½-3½	a ²D - y ²F°	2093.55	C	8	1.15	7.05	3½-3½	
1510.86	F	5	0.19	8.36	1½-2½	(6)	2066.41	C	5	1.25	7.22	2½-2½	
							2128.57	C	12	1.25	7.05	2½-3½	
1454.96	E	(4)	0.00	8.48	2½-2½	a ²D - y ²D°†	2090.14	C	5	1.32	7.22	1½-2½	
1500.44	F	10	0.19	8.41	1½-1½	(7)							
1370.20	E	(9)	0.00	9.01	2½-1½	a ²D - y ²P°†	2078.76	C	3	1.15	7.09	3½-2½	a ⁴F - z ²D°†
1381.36	E	(4)	0.19	9.12	1½-0½	(8)	2057.38	C	2	1.25	7.25	2½-1½	(16)
							2080.84	C	5	1.32	7.25	1½-1½	
1374.14	E	(3)	0.19	9.17	1½-0½	a ²D - z ²S°							
						(9)	2630.266	A	8	1.67	6.36	3½-3½	a ²F - z ²D°
1317.38	E	(15)	0.00	9.37	2½-3½	a ²D - x ²F°	2648.713	A	3	1.85	6.51	2½-2½	(17)
1344.45	E	(00)	0.19	9.37	1½-2½	(10)	2551.04	B	5	1.67	6.51	3½-2½	
							2587.25	B	4	1.85	6.62	2½-1½	
							2510.871	A	30	1.67	6.59	3½-4½	a ²F - z ⁴G°
Air							2545.903	A	20	1.85	6.70	2½-3½	(18)
2316.034	A	80R	1.04	6.36	4½-3½	a ⁴F - z ²D°†	2455.51	B	8	1.67	6.70	3½-3½	
2302.98	B	60R	1.15	6.51	3½-2½	(11)	2497.80	B	6	1.85	6.79	2½-2½	
2297.140	A	30R	1.25	6.62	2½-1½		2410.74	B	4	1.67	6.79	3½-2½	
2297.486	A	20R	1.32	6.69	1½-0½								
2367.395	A	20	1.15	6.36	3½-3½		2437.892	A	20	1.67	6.73	3½-4½	a ²F - z ⁴F°
2345.44	C	15	1.25	6.51	2½-2½		2473.13	B	15	1.85	6.84	2½-3½	(19)
2326.44	B	15	1.32	6.62	1½-1½		2387.77	B	25	1.67	6.84	3½-3½	
2412.25	B	5	1.25	6.36	2½-3½		2433.57	B	10	1.85	6.92	2½-2½	
							2350.84	B	8	1.67	6.92	3½-2½	
							2413.04	B	8	1.85	6.97	2½-1½	
2216.479†	A	100R	1.04	6.60	4½-5½	a ⁴F - z ⁴G°							
2270.209	A	40R	1.15	6.59	3½-4½	(12)	2394.518	A	50R	1.67	6.83	3½-4½	a ²F - z ²G°
2264.456	A	30R	1.25	6.70	2½-3½		2416.134	A	50R	1.85	6.96	2½-3½	(20)
2253.856	A	20R	1.32	6.79	1½-2½		2334.590	A	30	1.67	6.96	3½-3½	
2222.948	A	20R	1.04	6.59	4½-4½								
2224.88	B	20R	1.15	6.70	3½-3½		2296.553	A	30R	1.67	7.05	3½-3½	a ²F - z ²F°
2226.34	B	18R	1.25	6.79	2½-2½		2298.269	A	30R	1.85	7.22	2½-2½	(21)
2179.46	C	3	1.04	6.70	4½-3½		2224.351	A	6	1.67	7.22	3½-2½	
2188.05	B	6	1.15	6.79	3½-2½		2375.426	A	30	1.85	7.05	2½-3½	

Ni II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2278. 771	A	30R	1. 67	7. 09	$3\frac{1}{2}-2\frac{1}{2}$	$a^1F - z^1D^{\circ}$
2287. 082	A	20R	1. 85	7. 25	$2\frac{1}{2}-1\frac{1}{2}$	(22)
2356. 41	B	25	1. 85	7. 09	$2\frac{1}{2}-2\frac{1}{2}$	
Vac						
1886. 06	F	10	1. 67	8. 22	$3\frac{1}{2}-2\frac{1}{2}$	$a^1F - z^1P^{\circ}$
						(23)
1812. 07	F	10	1. 67	8. 48	$3\frac{1}{2}-2\frac{1}{2}$	$a^1F - y^1D^{\circ}\dagger$
1881. 18	F	10	1. 85	8. 41	$2\frac{1}{2}-1\frac{1}{2}$	(24)
Air						
2942. 71	B	1	2. 85	7. 05	$2\frac{1}{2}-3\frac{1}{2}$	$b^1D - z^1F^{\circ}$
2881. 24	B	2	2. 94	7. 22	$1\frac{1}{2}-2\frac{1}{2}$	(25)
2825. 23	B	4	2. 85	7. 22	$2\frac{1}{2}-2\frac{1}{2}$	
2913. 59	B	15	2. 85	7. 09	$2\frac{1}{2}-2\frac{1}{2}$	$b^1D - z^1D^{\circ}$
2863. 706	A	25	2. 94	7. 25	$1\frac{1}{2}-1\frac{1}{2}$	(26)
2808. 35	B	2	2. 85	7. 25	$2\frac{1}{2}-1\frac{1}{2}$	
2300. 10	B	15	2. 85	8. 22	$2\frac{1}{2}-2\frac{1}{2}$	$b^1D - z^1P^{\circ}$
2336. 59	C	5	2. 94	8. 22	$1\frac{1}{2}-1\frac{1}{2}$	(27)
2299. 65	B	8	2. 85	8. 22	$2\frac{1}{2}-1\frac{1}{2}$	
2312. 23	C	4	2. 94	8. 27	$1\frac{1}{2}-0\frac{1}{2}$	
2220. 40	B	10R	2. 85	8. 41	$2\frac{1}{2}-3\frac{1}{2}$	$b^1D - y^1F^{\circ}$
2377. 31	B	10	2. 94	8. 36	$1\frac{1}{2}-2\frac{1}{2}$	(28)
2242. 14	B	2	2. 85	8. 36	$2\frac{1}{2}-2\frac{1}{2}$	
2190. 97	C	2	2. 85	8. 48	$2\frac{1}{2}-2\frac{1}{2}$	$b^1D - y^1D^{\circ}$
2253. 67	B	6	2. 94	8. 41	$1\frac{1}{2}-1\frac{1}{2}$	(29)
2224. 50	B	2	2. 94	8. 48	$1\frac{1}{2}-2\frac{1}{2}$	
2179. 99	B	3	2. 85	8. 51	$2\frac{1}{2}-1\frac{1}{2}$	$b^1D - z^1P^{\circ}$
2247. 24	B	6	2. 94	8. 43	$1\frac{1}{2}-0\frac{1}{2}$	(30)
2213. 19	B	7	2. 94	8. 51	$1\frac{1}{2}-1\frac{1}{2}$	
2097. 08	C	12	2. 85	8. 74	$2\frac{1}{2}-3\frac{1}{2}$	$b^1D - y^1D^{\circ}\dagger$
2134. 28	C	8	2. 94	8. 72	$1\frac{1}{2}-2\frac{1}{2}$	(31)
2103. 39	C	5	2. 85	8. 72	$2\frac{1}{2}-2\frac{1}{2}$	
2131. 02	C	2	2. 94	8. 73	$1\frac{1}{2}-1\frac{1}{2}$	
2129. 14	C	3	2. 94	8. 73	$1\frac{1}{2}-0\frac{1}{2}$	
2054. 32	C	5	2. 85	8. 86	$2\frac{1}{2}-2\frac{1}{2}$	$b^1D - x^1D^{\circ}\dagger$
2083. 76	C	2	2. 94	8. 86	$1\frac{1}{2}-2\frac{1}{2}$	(32)
2004. 27	C	5	2. 85	9. 01	$2\frac{1}{2}-1\frac{1}{2}$	$b^1D - y^1P^{\circ}$
Vac						(33)
1995. 74	C	4	2. 94	9. 12	$1\frac{1}{2}-0\frac{1}{2}$	
Air						
2032. 30	C	5	2. 94	9. 01	$1\frac{1}{2}-1\frac{1}{2}$	
Vac						
1953. 41	F	10	2. 85	9. 17	$2\frac{1}{2}-1\frac{1}{2}$	$b^1D - z^1S^{\circ}$
1980. 00	F	5	2. 94	9. 17	$1\frac{1}{2}-1\frac{1}{2}$	(34)
Air						
3087. 07	B	20	3. 09	7. 09	$2\frac{1}{2}-2\frac{1}{2}$	$a^1P - z^1D^{\circ}$
2947. 45	B	8	3. 06	7. 25	$1\frac{1}{2}-1\frac{1}{2}$	(35)
2406. 89	B	6	3. 09	8. 22	$2\frac{1}{2}-2\frac{1}{2}$	$a^1P - z^1P^{\circ}$
2392. 10	B	6	3. 06	8. 22	$1\frac{1}{2}-1\frac{1}{2}$	(36)
2369. 23	B	6	3. 07	8. 27	$0\frac{1}{2}-0\frac{1}{2}$	
2406. 3	B	5	3. 09	8. 22	$2\frac{1}{2}-1\frac{1}{2}$	
2366. 56	B	10	3. 06	8. 27	$1\frac{1}{2}-0\frac{1}{2}$	
2392. 58	B	10	3. 06	8. 22	$1\frac{1}{2}-2\frac{1}{2}$	
2394. 843	A	12	3. 07	8. 22	$0\frac{1}{2}-1\frac{1}{2}$	
2319. 73	B	12	3. 09	8. 41	$2\frac{1}{2}-3\frac{1}{2}$	$a^1P - y^1F^{\circ}$
2343. 489	A	12	3. 09	8. 36	$2\frac{1}{2}-2\frac{1}{2}$	(37)

Ni II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2287. 66	B	10	3. 09	8. 48	$2\frac{1}{2}-2\frac{1}{2}$	$a^1P - y^1D^{\circ}$
*2305. 24	B	10	3. 06	8. 41	$1\frac{1}{2}-1\frac{1}{2}$	(38)
2318. 48	B	12	3. 09	8. 41	$2\frac{1}{2}-1\frac{1}{2}$	
2274. 75	B	8	3. 06	8. 48	$1\frac{1}{2}-2\frac{1}{2}$	
2307. 79	B	8	3. 07	8. 41	$0\frac{1}{2}-1\frac{1}{2}$	
2275. 70	B	7	3. 09	8. 51	$2\frac{1}{2}-1\frac{1}{2}$	$a^1P - z^1P^{\circ}$
2298. 50	B	6	3. 06	8. 43	$1\frac{1}{2}-0\frac{1}{2}$	(39)
2262. 90	B	2	3. 06	8. 51	$1\frac{1}{2}-1\frac{1}{2}$	
2301. 01	B	4	3. 07	8. 43	$0\frac{1}{2}-0\frac{1}{2}$	
2265. 36	B	2	3. 07	8. 51	$0\frac{1}{2}-1\frac{1}{2}$	
2185. 51	B	12R	3. 09	8. 74	$2\frac{1}{2}-3\frac{1}{2}$	$a^1P - y^1D^{\circ}\dagger$
2180. 46	B	10	3. 06	8. 72	$1\frac{1}{2}-2\frac{1}{2}$	(40)
2179. 36	C	6	3. 07	8. 73	$0\frac{1}{2}-1\frac{1}{2}$	
2177. 08	B	6	3. 06	8. 73	$1\frac{1}{2}-1\frac{1}{2}$	
2177. 36	B	6	3. 07	8. 73	$0\frac{1}{2}-0\frac{1}{2}$	
2127. 77	C	6	3. 06	8. 86	$1\frac{1}{2}-2\frac{1}{2}$	$a^1P - x^1D^{\circ}\dagger$
2084. 87	C	5	3. 09	9. 01	$2\frac{1}{2}-1\frac{1}{2}$	$a^1P - y^1P^{\circ}$
2074. 13	C	2	3. 06	9. 01	$1\frac{1}{2}-1\frac{1}{2}$	(42)
2029. 20	C	10	3. 09	9. 17	$2\frac{1}{2}-1\frac{1}{2}$	$a^1P - z^1S^{\circ}$
2019. 03	C	10	3. 06	9. 17	$1\frac{1}{2}-1\frac{1}{2}$	(43)
2020. 98	C	10	3. 07	9. 17	$0\frac{1}{2}-1\frac{1}{2}$	
Vac						
1965. 35	C	10	3. 09	9. 37	$2\frac{1}{2}-3\frac{1}{2}$	$a^1P - x^1F^{\circ}$
1956. 97	C	6	3. 06	9. 37	$1\frac{1}{2}-2\frac{1}{2}$	(44)
Air						
2665. 25	B	6	3. 59	8. 22	$1\frac{1}{2}-1\frac{1}{2}$	$a^1P - z^1P^{\circ}$
2670. 33	B	3	3. 65	8. 27	$0\frac{1}{2}-0\frac{1}{2}$	(45)
2588. 31	B	2	3. 59	8. 36	$1\frac{1}{2}-2\frac{1}{2}$	$a^1P - y^1F^{\circ}$
						(46)
2520. 33	B	2	3. 59	8. 48	$1\frac{1}{2}-2\frac{1}{2}$	$a^1P - y^1D^{\circ}$
2557. 88	B	6	3. 59	8. 41	$1\frac{1}{2}-1\frac{1}{2}$	(47)
2505. 84	B	20	3. 59	8. 51	$1\frac{1}{2}-1\frac{1}{2}$	$a^1P - z^1P^{\circ}$
2584. 01	B	8	3. 65	8. 43	$0\frac{1}{2}-0\frac{1}{2}$	(48)
2549. 56	B	8	3. 59	8. 43	$1\frac{1}{2}-0\frac{1}{2}$	
2539. 09	B	7	3. 65	8. 51	$0\frac{1}{2}-1\frac{1}{2}$	
2405. 17	B	15	3. 59	8. 72	$1\frac{1}{2}-2\frac{1}{2}$	$a^1P - y^1D^{\circ}$
2431. 57	B	8	3. 65	8. 73	$0\frac{1}{2}-1\frac{1}{2}$	(49)
2398. 62	B	2	3. 59	8. 73	$1\frac{1}{2}-0\frac{1}{2}$	
2341. 18	B	40	3. 59	8. 86	$1\frac{1}{2}-2\frac{1}{2}$	$a^1P - x^1D^{\circ}$
2336. 70	C	15	3. 65	8. 93	$0\frac{1}{2}-1\frac{1}{2}$	(50)
2308. 52	B	12	3. 59	8. 93	$1\frac{1}{2}-1\frac{1}{2}$	
2276. 45	B	5	3. 59	9. 01	$1\frac{1}{2}-1\frac{1}{2}$	$a^1P - y^1P^{\circ}$
2256. 15	B	8	3. 65	9. 12	$0\frac{1}{2}-0\frac{1}{2}$	(51)
2229. 85	B	3u	3. 59	9. 12	$1\frac{1}{2}-0\frac{1}{2}$	
2303. 85	B	6	3. 65	9. 01	$0\frac{1}{2}-1\frac{1}{2}$	
2211. 09	B	8	3. 59	9. 17	$1\frac{1}{2}-0\frac{1}{2}$	$a^1P - z^1S^{\circ}$
						(52)
2236. 08	B	2	3. 65	9. 17	$0\frac{1}{2}-1\frac{1}{2}$	$a^1P - z^1S^{\circ}$
						(53)
2805. 67	B	10	4. 01	8. 41	$4\frac{1}{2}-3\frac{1}{2}$	$a^1G - y^1F^{\circ}$
2842. 401	A	8	4. 01	8. 36	$3\frac{1}{2}-2\frac{1}{2}$	(54)
2760. 67	B	2	4. 01	8. 48	$3\frac{1}{2}-2\frac{1}{2}$	$a^1G - y^1D^{\circ}$
						(55)
2611. 66	B	3	4. 01	8. 74	$4\frac{1}{2}-3\frac{1}{2}$	$a^1G - y^1D^{\circ}\dagger$
						(56)

Ni II—Continued

Ni II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2547.16	B	3	4.01	8.86	$3\frac{1}{2}-2\frac{1}{2}$	$a^2G - z^2D^{\circ}$ (57)	Air 2684.405	A	20u	6.73	11.33	$4\frac{1}{2}-4\frac{1}{2}$	$z^4F^{\circ} - e^4F$ (63)
2312.91	B	20	4.01	9.35	$4\frac{1}{2}-5\frac{1}{2}$	$a^2G - z^2H^{\circ}$ (58)	2708.780	A	9u	6.84	11.40	$3\frac{1}{2}-3\frac{1}{2}$	
2345.26	C	30	4.01	9.28	$3\frac{1}{2}-4\frac{1}{2}$		2679.25	B	6u	6.92	11.53	$2\frac{1}{2}-2\frac{1}{2}$	
2343.93	B	4	4.01	9.28	$4\frac{1}{2}-4\frac{1}{2}$		2655.90	B	6u	6.97	11.61	$1\frac{1}{2}-1\frac{1}{2}$	
2302.465	A	10	4.01	9.37	$4\frac{1}{2}-3\frac{1}{2}?$	$a^2G - z^2F^{\circ}$ (59)	2647.04	B	5u	6.73	11.40	$4\frac{1}{2}-3\frac{1}{2}$	
*2305.24	B	10	4.01	9.37	$3\frac{1}{2}-2\frac{1}{2}?$		2632.86	B	5u	6.84	11.53	$3\frac{1}{2}-2\frac{1}{2}$	
2107.94	C	18R	4.01	9.87	$4\frac{1}{2}-4\frac{1}{2}$	$a^2G - \gamma^2G^{\circ}$ (60)	2631.52	B	2u	6.92	11.61	$2\frac{1}{2}-1\frac{1}{2}$	
2113.51	C	12	4.01	9.85	$3\frac{1}{2}-3\frac{1}{2}$		2565.36	B	2u	6.73	11.55	$4\frac{1}{2}-3\frac{1}{2}?$	$z^4F^{\circ} - e^2F$ (64)
2109.01	C	5	4.01	9.87	$3\frac{1}{2}-4\frac{1}{2}$		2615.20	B	15u	6.83	11.55	$4\frac{1}{2}-3\frac{1}{2}$	$z^2G^{\circ} - e^2F$ (65)
2484.32	B	10u	6.36	11.33	$3\frac{1}{2}-4\frac{1}{2}$	$z^4D^{\circ} - e^4F$ (61)	2606.40	B	8u	6.96	11.69	$3\frac{1}{2}-2\frac{1}{2}$	
2525.42	B	10u	6.51	11.40	$2\frac{1}{2}-3\frac{1}{2}$		2690.62	B	3u	6.96	11.55	$3\frac{1}{2}-3\frac{1}{2}$	
2514.75	B	6u	6.62	11.53	$1\frac{1}{2}-2\frac{1}{2}$		2742.981	A	15u	7.05	11.55	$3\frac{1}{2}-3\frac{1}{2}$	$z^2F^{\circ} - e^2F$ (66)
2459.32	B	4U	6.51	11.53	$2\frac{1}{2}-2\frac{1}{2}$		2759.02	B	8u	7.22	11.69	$2\frac{1}{2}-2\frac{1}{2}$	
2610.08	B	25u	6.60	11.33	$5\frac{1}{2}-4\frac{1}{2}$	$z^4G^{\circ} - e^4F$ (62)	2655.46	B	2u	7.05	11.69	$3\frac{1}{2}-2\frac{1}{2}$	
2566.08	B	15u	6.59	11.40	$4\frac{1}{2}-3\frac{1}{2}$		2864.16	B	2U	7.09	11.40	$2\frac{1}{2}-3\frac{1}{2}$	$z^2D^{\circ} - e^4F$ (67)
2555.13	B	10u	6.70	11.53	$3\frac{1}{2}-2\frac{1}{2}$		2768.78	B	8u	7.09	11.55	$2\frac{1}{2}-3\frac{1}{2}$	$z^2D^{\circ} - e^2F$ (68)
2560.30	B	10u	6.79	11.61	$2\frac{1}{2}-1\frac{1}{2}$		2775.31	B	6u	7.25	11.69	$1\frac{1}{2}-2\frac{1}{2}$	
2601.126	B	8u	6.59	11.33	$4\frac{1}{2}-4\frac{1}{2}$								
2626.57	B	4u	6.70	11.40	$3\frac{1}{2}-3\frac{1}{2}$								
2605.45	B	3u	6.79	11.53	$2\frac{1}{2}-2\frac{1}{2}$								

Strongest Unclassified Lines of Ni II

(List probably incomplete)

Vac	F	Int				Vac	F	Int			
1649.94	F	10				1614.82	F	15			
1629.28	F	10				1608.44	F	10			
1621.45	F	10				1592.07	F	10			
1619.85	F	10				1585.11	F	10			
1617.14	F	20				1533.44	F	20			
1616.91	F	10				1526.71	F	15			

Ni III

I P 35.21 Anal B List C December 1951

REFERENCE

A A. G. Shenstone, unpublished material (May 1950). W L, I, T, I P

Ni III

Ni III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
*867. 508	A	10	0. 00	14. 23	4-5	$a^1F - z^1G^0$	752. 023	A	25	0. 17	16. 58	3-3, 2	$a^1F - 7^0$
867. 194	A	1	0. 17	14. 40	3-4	(1)	757. 201	A	10	0. 28	16. 58	2-3, 2	(10)
*867. 508	A	10	0. 28	14. 51	2-3		730. 109	A	30	0. 00	16. 91	4-3	$a^1F - 8^0$
857. 087	A	15	0. 00	14. 40	4-4		737. 430	A	20	0. 17	16. 91	3-3	(11)
860. 642	A	30	0. 00	14. 34	4-4	$a^1F - z^1F^0$	722. 094	A	20	0. 00	17. 10	4-3	$a^1F - 9^0$
862. 882	A	25	0. 17	14. 47	3-3	(2)	729. 249	A	10	0. 17	17. 10	3-3	(12)
863. 217	A	25	0. 28	14. 58	2-2								
856. 506	A	1	0. 17	14. 58	3-2								
870. 845	A	10	0. 17	14. 34	3-4								
869. 702	A	10	0. 28	14. 47	2-3								
842. 142	A	30	0. 00	14. 66	4-3	$a^1F - z^1D^0$	979. 589	A	30	2. 06	14. 66	2-3	$a^1P - z^1D^0 \uparrow$
845. 242	A	20	0. 17	14. 77	3-2	(3)	973. 786	A	20	2. 10	14. 77	1-2	(13)
847. 433	A	15	0. 28	14. 85	2-1		970. 478	A	10	2. 13	14. 85	0-1	
*758. 763	A	100d	0. 00	16. 27	4-4	$a^1F - y^1F^0 \uparrow$	*1769. 643	A	200	6. 63	13. 61	5-5	$a^1F - z^1F^0 \uparrow$
757. 795	A	50	0. 17	16. 44	3-3	(4)	1794. 904	A	25	6. 75	13. 63	4-4	(14)
750. 983	A	10	0. 28	16. 57	2-2		1791. 644	A	20	6. 84	13. 73	3-3	
			0. 00	16. 44	4-3		1786. 927	A	20	6. 91	13. 82	2-2	
756. 687	A	20	0. 00	16. 31	4-4	$a^1F - 2^0$	1782. 747	A	20	6. 95	13. 88	1-1	
					(5)		*1764. 688	A	100	6. 63	13. 63	5-4	
751. 333	A	10	0. 00	16. 43	4-3	$a^1F - 3^0$	1767. 938	A	50	6. 75	13. 73	4-3	
759. 098	A	20	0. 17	16. 43	3-3	(6)	*1769. 643	A	200	6. 84	13. 82	3-2	
							1771. 492	A	20	6. 91	13. 88	2-1	
750. 053	A	30	0. 00	16. 46	4-5, 4	$a^1F - 5^0$	1718. 365	A	20	6. 63	13. 81	5-4	$a^1F - z^1D^0 \uparrow$
					(7)		1715. 931	A	20	6. 75	13. 94	4-3	(15)
749. 677	A	10	0. 00	16. 47	4-3	$a^1F - z^1P^0$	1716. 886	A	15	6. 84	14. 03	3-2	
					(8)		1719. 892	A	15	6. 91	14. 09	2-1	
							1724. 523	A	15	6. 95	14. 11	1-0	
747. 989	A	20	0. 00	16. 50	4-5	$a^1F - y^1G^0$	1747. 011	A	50	6. 75	13. 81	4-4	
751. 575	A	10	0. 17	16. 59	3-4	(9)	1738. 252	A	30	6. 84	13. 94	3-3	
							1733. 129	A	50	6. 91	14. 03	2-2	
							1730. 483	A	15	6. 95	14. 09	1-1	

Ni III—Continued

Ni III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1692.514	A	200	6.63	13.92	5-6	$a^5F - z^5G^\circ \uparrow$	2434.230	A	30	9.27	14.34	5-4	$a^5G - z^5F^\circ$
1709.901	A	200	6.75	13.97	4-5	(16)	2402.877	A	20	9.34	14.47	4-3	(26)
1715.303	A	200	6.84	14.04	3-4		2387.188	A	10	9.41	14.58	3-2	
1719.458	A	100	6.91	14.09	2-3		Vac						
1722.283	A	100	6.95	14.12	1-2		1773.788	A	10	9.27	16.23	5-5, 4	$a^5G - 1^\circ$
1649.770	A	15	6.75	14.23	4-5	$a^5F - z^5G^\circ \uparrow$	1790.402	A	30	9.34	16.23	4-5, 4	(27)
1632.159	A	10	6.84	14.40	3-4	(17)	*1764.688	A	100	9.27	16.27	5-4	$a^5G - y^5F^\circ \uparrow$
1930.431	A	20	7.57	13.97	4-5	$b^5F - z^5G^\circ \uparrow$	1738.785	A	30	9.34	16.44	4-3	(28)
1956.964	A	10	7.73	14.04	3-4	(18)	1724.291	A	20	9.41	16.57	3-2	
1854.149	A	100	7.57	14.23	4-5	$b^5F - z^5G^\circ$	1753.377	A	2	9.27	16.31	5-4	$a^5G - 2^\circ$
1849.540	A	25	7.73	14.40	3-4	(19)	1788.301	A	30	9.41	16.31	3-4	(29)
1849.473	A	25	7.84	14.51	2-3		1707.426	A	50	9.27	16.50	5-5	$a^5G - y^5G^\circ$
1823.061	A	100	7.57	14.34	4-4	$b^5F - z^5F^\circ \uparrow$	1701.599	A	15	9.34	16.59	4-4	(30)
1830.006	A	100	7.73	14.47	3-3	(20)	1722.790	A	5	9.34	16.50	4-5	
1830.075	A	50	7.84	14.58	2-2		1718.873	A	5	9.41	16.59	3-4	
1801.506	A	15	7.73	14.58	3-2		1721.256	A	75	9.41	16.58	3-3, 2	$a^5G - 7^\circ \uparrow$
1741.963	A	20	7.57	14.66	4-3	$b^5F - z^5D^\circ \uparrow$	Air						(31)
1752.427	A	25	7.73	14.77	3-2	(21)	2524.360	A	15	9.77	14.66	2-3	$b^5P - z^5D^\circ \uparrow$
1760.560	A	20	7.84	14.85	2-1		Vac						(32)
1781.279	A	15	7.73	14.66	3-3		1847.257	A	100	9.77	16.45	2-2, 1	$b^5P - 4^\circ$
1779.442	A	10	7.84	14.77	2-2		1843.406	A	15	9.77	16.47	2-3	(33)
Air													$b^5P - z^5P^\circ$
2543.513	A	30	8.77	13.63	3-4	$a^5P - z^5F^\circ \uparrow$							(34)
2509.467	A	10	8.81	13.73	2-3	(22)	1446.749	A	10	13.81	22.35	4-5	$z^5D^\circ - e^5F$
2448.347	A	100	8.77	13.81	3-4	$a^5P - z^5D^\circ \uparrow$							(35)
2405.937	A	50	8.81	13.94	2-3	(23)	1465.605	A	10	13.92	22.35	6-5	$z^5G^\circ - e^5F$
2391.106	A	15	8.87	14.03	1-2								(36)
2365.172	A	10	8.81	14.03	2-2		1506.519	A	15	14.40	22.60	4-4	$z^5G^\circ - e^5F$
2365.972	A	8	8.87	14.09	1-1								(37)
Vac							1495.622	A	20	14.34	22.60	4-4	$z^5F^\circ - e^5F$
1952.540	A	100	8.77	15.10	3-2	$a^5P - z^5S^\circ$							(38)
1964.689	A	50	8.81	15.10	2-2	(24)							
1982.538	A	15	8.87	15.10	1-2								
1687.897	A	30	8.77	16.09	3-4	$a^5P - y^5D^\circ \uparrow$							
*1707.346	A	50	8.81	16.04	2-3	(25)							
1698.176	A	15	8.77	16.04	3-3								
1708.552	A	15	8.81	16.04	2-2								
1720.708	A	10	8.87	16.04	1-1								

Cu I—Continued

Cu I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1691.076	A	30	1.38	8.68	2½-3½	4s² ¹D - 5p' ¹F°†	2702.65	A	10h	5.05	9.62	4½-3½	4p' ¹F°-5d' ²G
1688.865	A	15	1.38	8.69	2½-2½	(27)	2802.556	A	10h	5.08	9.48	3½-4½	(47)
							2751.29	D	10h	5.13	9.62	2½-3½	
1688.093	A	30	1.38	8.70	2½-3½	4s² ¹D - 5p' ¹D°†	2746.713	A	20h	5.13	9.62	2½-2½	4p' ¹F°-5d' ²F
1684.674	A	20h	1.38	8.71	2½-2½	(28)	2803.686	A	10h	5.22	9.62	1½-2½	(48)
1730.576	A	10	1.64	8.77	1½-1½								
1655.318	A	30R	1.38	8.84	2½-3½	4s² ¹D - 5p' ²F°†	2768.878	D	125h	5.05	9.51	4½-5½	4p' ¹F°-5d' ²G†
1732.674	A	20	1.64	8.76	1½-2½	(29)	2723.953	D	30	5.08	9.61	3½-4½	(49)
							2671.204	A	20h	5.13	9.75	2½-3½	
1651.721	A	20R	1.38	8.86	2½-2½	4s² ¹D - 5p' ¹D°	2720.199	D	15h	5.22	9.76	1½-2½	
1701.292	A	10	1.64	8.89	1½-1½	(30)							
1585.871	A	5h	1.38	9.17	2½-1½	4s² ¹D - 5p'' ²P°	2786.496	D	10h	5.08	9.51	3½-2½	4p' ¹F°-5d' ²P†
1616.940	A	20h	1.64	9.27	1½-0½	(31)							
1583.799	A	15	1.38	9.18	2½-3½	4s² ¹D - 5p'' ²F°	2783.551	D	20h	5.08	9.51	3½-3½	4p' ¹F°-5d' ²D†
1621.316	A	20	1.64	9.25	1½-2½	(32)							
Air							2763.809	A	15h	5.05	9.52	4½-4½	4p' ¹F°-5d' ²F†
2494.89	A	10	3.80	8.75	1½-1½	4p ²P°-4d' ²P†	2719.097	A	15h	5.08	9.62	3½-3½	(52)
2416.605	A	5	3.80	8.91	1½-0½	(33)	2782.592	D	20h	5.08	9.52	3½-4½	
							2715.543	A	20h	5.22	9.77	1½-2½	
2479.754	A	10	3.80	8.78	1½-2½	4p ²P°-4d' ²D†	2676.428	A	20	5.05	9.66	4½-3½	4p' ¹F°-7s' ²D†
						(34)							(53)
2933.060	A	20	4.83	9.02	2½-3½	4p' ¹P°-4d' ²G	2579.29	A	20h	5.05	9.84	4½-5½	4p' ¹F°-6d' ²G†
						(35)							(54)
2858.225	B	50h	4.83	9.13	2½-3½	4p' ¹P°-6s' ²D†	2991.780	A	15h	5.50	9.62	1½-2½	4p' ¹D°-5d' ²F†
2931.699	A	10h	5.05	9.26	0½-1½	(36)							(55)
2846.478	D	15	5.05	9.39	0½-0½		2911.215	A	30h	5.37	9.61	3½-4½	4p' ¹D°-5d' ²G†
2844.160	A	15	4.95	9.29	1½-1½	4p' ¹P°-4d'' ²P†	2890.84	A	50h	5.58	9.75	2½-3½	(56)
2926.057	A	10	5.05	9.27	0½-0½	(37)	2979.380	A	25h	5.37	9.51	3½-3½	4p' ¹D°-5d' ²D†
2851.743	A	15h	4.95	9.28	1½-2½	4p' ¹P°-6s' ²D†							(57)
						(38)	2978.295	A	30h	5.37	9.52	3½-4½	4p' ¹D°-5d' ²F†
2734.858	A	10	4.83	9.33	2½-3½	4p' ¹P°-4d'' ²F†	2983.038	A	3h	5.48	9.62	2½-3½	(58)
						(39)	2891.64	A	30h	5.50	9.77	1½-2½	
2634.933	A	30h	4.83	9.50	2½-1½	4p' ¹P°-5d' ²S	2922.830	A	10h	5.54	9.77	0½-1½	
						(40)							
2630.004	A	20h	4.83	9.51	2½-2½	4p' ¹P°-5d' ²P	2925.439	D	30h	5.40	9.62	2½-3½	4p' ²F°-5d' ²G†
2649.840	A	30h	4.95	9.61	1½-1½	(41)							(59)
2651.693	A	10h	4.95	9.61	1½-0½		2920.296	A	10h	5.40	9.62	2½-2½	4p' ²F°-5d' ²F†
2627.365	A	20h	4.83	9.51	2½-3½	4p' ¹P°-5d' ²D							(60)
2645.303	A	20h	4.95	9.62	1½-2½	(42)	2924.882	D	10h	5.40	9.62	2½-2½	4p' ²F°-5d' ²D
2626.678	A	10h	5.05	9.75	0½-1½								(61)
2570.800	A	10h	4.83	9.62	2½-2½		2923.704	D	80h	5.40	9.62	2½-3½	4p' ²F°-5d' ²F†
2569.888	A	10h	4.83	9.62	2½-3½	4p' ¹P°-5d' ²F							(62)
2563.167	A	10h	4.95	9.77	1½-2½	(43)	2751.810	D	10h	5.55	10.04	3½-2½	4p' ²F°-5d'' ²D
2547.48	A	10h	4.83	9.66	2½-3½	4p' ¹P°-7s' ²D†							(63)
						(44)	2745.452	A	20h	5.55	10.04	3½-3½	4p' ²F°-5d'' ²F
													(64)
3021.544	B	300h	5.05	9.13	4½-3½	4p' ¹F°-6s' ²D†	2844.842	A	10h	5.70	10.04	1½-1½	4p' ¹D°-5d'' ²D
3014.848	A	30h	5.08	9.17	3½-2½	(45)							(65)
2985.926	A	10h	5.13	9.26	2½-1½		2874.560	A	20h	5.75	10.04	2½-3½	4p' ¹D°-5d'' ²F
3044.028	D	20h	5.08	9.13	3½-3½		2840.92	A	10h	5.70	10.04	1½-2½	(66)
3052.554	A	15h	5.13	9.17	2½-2½		2875.67	A	10h	5.75	10.04	2½-2½	
3053.38	A	10h	5.22	9.26	1½-1½								
2938.868	A	15h	5.08	9.28	3½-2½	4p' ¹F°-6s' ²D†							
2974.675	A	10	5.13	9.28	2½-2½	(46)							

Cu II

I P 20.18 Anal A List B November 1949

REFERENCE

A A. G. Shenstone, Phil. Trans. Roy. Soc. London [A] 235, No. 751, pp. 195-243 (1936). I P, T, W L, I

Cu II

Cu II

I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High			
Vac 1472.399	A	20	0.00	8.38	0-1	$3d^{10} 1S - 4p$ (1)	$^1P^{\circ}$
1367.952	A	25	0.00	9.02	0-1	$3d^{10} 1S - 4p$ (2)	$^1D^{\circ}$
1358.764	A	30	0.00	9.09	0-1	$3d^{10} 1S - 4p$ (3)	$^1P^{\circ}$
826.995	A	30	0.00	14.93	0-1	$3d^{10} 1S - 5p$ (4)	$^1P^{\circ}$
810.997	A	15	0.00	15.22	0-1	$3d^{10} 1S - 5p$ (5)	$^1D^{\circ}$
813.882	A	20	0.00	15.17	0-1	$3d^{10} 1S - 5p$ (6)	$^1P^{\circ}$
797.452	A	10	0.00	15.48	0-1	$3d^{10} 1S - 4p'''$ (7)	$^1P^{\circ}$
736.031	A	25	0.00	16.77	0-1	$3d^{10} 1S - 4f$ (8)	$^1P^{\circ}$
735.519	A	20	0.00	16.78	0-1	$3d^{10} 1S - 4f$ (9)	$^1P^{\circ}$
724.487	A	15	0.00	17.04	0-1	$3d^{10} 1S - 4f$ (10)	$^1D^{\circ}$
718.171	A	10	0.00	17.19	0-1	$3d^{10} 1S - 6p$ (11)	$^1P^{\circ}$
709.303	A	10	0.00	17.40	0-1	$3d^{10} 1S - 6p$ (12)	$^1P^{\circ}$

Air 2246.995	A	75	2.71	8.20	3-2	$4s ^1D - 4p$ (13)	$^1P^{\circ}$
2218.100	A	50	2.82	8.38	2-1		
2228.863	A	40	2.96	8.50	1-0		
2294.364	A	40	2.82	8.20	2-2		
2276.253	A	35	2.96	8.38	1-1		
2356.638	A	10	2.96	8.20	1-2		
2135.976†	A	75	2.71	8.48	3-4	$4s ^1D - 4p$ (14)	$^1F^{\circ}$
2192.260	A	75	2.82	8.45	2-3		
2179.399	A	60	2.96	8.63	1-2		
2148.974	A	60	2.71	8.45	3-3		
2126.028	A	50	2.82	8.63	2-2		
2085.295	A	8	2.71	8.63	3-2		
2043.791	A	60	2.71	8.75	3-3	$4s ^1D - 4p$ (15)	$^1D^{\circ} \dagger$
2054.969	A	50	2.82	8.83	2-2		
2035.845	A	30	2.96	9.02	1-1		
2016.885	A	8	2.71	8.83	3-2		
Vac 1989.849	A	30	2.82	9.02	2-1		
Air 2104.782	A	40	2.96	8.83	1-2		
Vac 2000.339	A	60	2.71	8.88	3-3	$4s ^1D - 4p$ (16)	$^1F^{\circ}$
Air 2037.119	A	30	2.82	8.88	2-3		
Vac 1944.586	A	25	2.71	9.06	3-2	$4s ^1D - 4p$ (17)	$^1D^{\circ}$
1979.947	A	50	2.82	9.06	2-2		
Air 2025.475	A	8	2.96	9.06	1-2		
Vac 1970.489	A	15	2.82	9.09	2-1	$4s ^1D - 4p$ (18)	$^1P^{\circ}$
Air 2015.576	A	5	2.96	9.09	1-1		
Vac 1157.871	A	8	2.96	13.62	1-2	$4s ^1D - 4p'$ (19)	$^1D^{\circ} \dagger$
1144.853	A	30	2.71	13.49	3-3		
1142.642	A	20	2.82	13.62	2-2		
1147.762	A	8	2.96	13.72	1-1		
1119.945	A	15	2.71	13.73	3-4	$4s ^1D - 4p'$ (20)	$^1G^{\circ} \dagger$
1123.226	A	5	2.82	13.81	2-3		
1094.401	A	30	2.71	13.99	3-4	$4s ^1D - 4p'$ (21)	$^1F^{\circ} \dagger$
1097.049	A	25	2.82	14.07	2-3		
1070.308	A	15	2.71	14.24	3-4	$4s ^1D - 4p''$ (22)	$^1G^{\circ}$
1049.363	A	20	2.82	14.58	2-3		
1039.345	A	60	2.71	14.58	3-3		
1058.796	A	40	2.71	14.37	3-3	$4s ^1D - 4p''$ (23)	$^1D^{\circ}$
1060.630	A	60	2.82	14.46	2-2		
1063.003	A	60	2.96	14.58	1-1		
1050.399	A	10	2.71	14.46	3-2		
1050.153	A	10	2.82	14.58	2-1		
1069.193	A	50	2.82	14.37	2-3		
1073.738	A	30	2.96	14.46	1-2		
1044.516	A	80	2.71	14.53	3-4	$4s ^1D - 4p''$ (24)	$^1F^{\circ}$
1066.133	A	20	2.82	14.40	2-3		
1052.170	A	20	2.96	14.70	1-2		
1055.795	A	40	2.71	14.40	3-3		
1039.569	A	60	2.82	14.70	2-2		
1029.747	A	10	2.71	14.70	3-2		
1030.261	A	20	2.71	14.69	3-4	$4s ^1D - 4p''$ (25)	$^1G^{\circ}$
1018.705	A	50	2.71	14.83	3-2	$4s ^1D - 5p$ (26)	$^1P^{\circ}$
1019.652	A	15	2.82	14.93	2-1		
*1018.054	A	15d	2.96	15.09	1-0		
1028.326	A	25	2.82	14.83	2-2		
1031.764	A	8	2.96	14.93	1-1		
1011.52	P		2.71	14.91	3-4	$4s ^1D - 5p$ (27)	$^1F^{\circ} \dagger$
1022.100	A	5	2.82	14.90	2-3		
1012.595	A	25	2.71	14.90	3-3		
1001.010	A	8	2.82	15.15	2-2		
1020.106	A	15	2.82	14.92	2-2	$4s ^1D - 4p''$ (28)	$^1D^{\circ} \dagger$

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)		I A	Ref	Int	E P		J	Multiplet (No)
			Low	High							Low	High		
Vac								Vac						
1008.568	A	30	2.71	14.95	3-3	4s ¹ D -4p'' ¹ F°		862.011	A	40	2.71	17.03	3-4	4s ¹ D -4p'' ¹ F°†
*1018.054	A	15d	2.82	14.95	2-3	(29)		865.383	A	40	2.82	17.09	2-3	(46)
1004.053	A	30	2.71	15.00	3-3	4s ¹ D -5p ¹ D°†		869.336	A	25	2.96	17.16	1-2	
*1008.726	A	30	2.82	15.06	2-2	(30)		*858.482	A	25d	2.71	17.09	3-3	
989.245	A	8	2.71	15.19	3-3	4s ¹ D -5p ¹ F°		851.300	A	25	2.71	17.21	3-4	4s ¹ D -6p ¹ F°†
998.310	A	8	2.82	15.19	2-3	(31)		*858.482	A	25d	2.82	17.20	2-3	(47)
992.951	A	25	2.82	15.25	2-2	4s ¹ D -5p ¹ D°†		848.806	A	15	2.71	17.25	3-3	4s ¹ D -6p ¹ D°†
968.037	A	25	2.71	15.46	3-3	4s ¹ D -4p''' ¹ D°†		855.701	A	10	2.82	17.25	2-2	(48)
976.540	A	10	2.82	15.46	2-2	(33)		*864.199	A	10d	2.96	17.25	1-2	
984.530	A	10	2.96	15.50	1-1			779.300	A	8	2.71	18.55	3-2	4s ¹ D -4p'' ¹ P°†
976.708	A	10	2.82	15.46	2-3			Air						
987.656	A	10	2.96	15.46	1-2			2400.112	A	20	3.24	8.38	2-1	4s ¹ D -4p ¹ P°†
989.522	A	10	2.71	15.85	3-2	4s ¹ D -4p'' ¹ P°†		2369.887	A	100	3.24	8.45	2-3	4s ¹ D -4p ¹ F°†
935.892	A	60	2.71	15.90	3-4	4s ¹ D -4p''' ¹ F°†		2242.613	A	50	3.24	8.75	2-3	4s ¹ D -4p ¹ D°
945.976	A	50	2.82	15.87	2-3	(35)		2210.259	A	60	3.24	8.83	2-2	(52)
956.286	A	25	2.96	15.87	1-2			*2134.355	A	35	3.24	9.02	2-1	
945.860	A	40	2.82	15.87	2-2			*2189.621	A	50	3.24	8.88	2-3	4s ¹ D -4p ¹ F°
932.940	A	60	2.71	15.94	3-3	4s ¹ D -4p'' ¹ P°		2122.966	A	50	3.24	9.06	2-2	4s ¹ D -4p ¹ D°
943.328	A	60	2.82	15.91	2-2	(36)		2112.090	A	30	3.24	9.09	2-1	4s ¹ D -4p ¹ P°
945.524	A	60	2.96	16.02	1-1									(55)
935.25	A	40	2.71	15.91	3-2			Vac						
935.35	A	20	2.82	16.02	2-1			1088.393	A	20	3.24	14.58	2-3	4s ¹ D -4p'' ¹ G°
922.017	A	60	2.71	16.10	3-2	4s ¹ D -4p''' ¹ P°†		1065.781	A	20	3.24	14.83	2-2	4s ¹ D -5p ¹ P°
914.209	A	80	2.71	16.21	3-3	4s ¹ D -4p'' ¹ D°		1059.094	A	60	3.24	14.90	2-3	4s ¹ D -5p ¹ F°
*925.125	A	30	2.82	16.17	2-	(38)		1036.468	A	60	3.24	15.15	2-2	4s ¹ D -4p'' ¹ D°
*935.074	A	60	2.96	16.17	1-			1056.952	A	60	3.24	14.92	2-2	4s ¹ D -4p'' ¹ F°
917.303	A	20	2.71	16.17	3-2			1054.690	A	60	3.24	14.95	2-3	4s ¹ D -4p'' ¹ P°
924.239	A	50	2.82	16.18	2-3	4s ¹ D -4p''' ¹ F°		1049.754	A	50	3.24	15.00	2-3	4s ¹ D -5p ¹ D°
893.674	A	80	2.71	16.52	3-2	4s ¹ D -4p'' ¹ P°		1044.742	A	80	3.24	15.06	2-2	4s ¹ D -5p ¹ P°
896.753	A	60	2.82	16.59	2-1	(40)		1035.160	A	8	3.24	15.17	2-1	4s ¹ D -5p ¹ F°
896.970	A	40	2.96	16.73	1-0			1033.560	A	10	3.24	15.19	2-3	4s ¹ D -5p ¹ D°
901.071	A	60	2.82	16.52	2-2			1027.830	A	50	3.24	15.25	2-2	4s ¹ D -5p ¹ F°
906.109	A	40	2.96	16.59	1-1			1010.453	A	10	3.24	15.46	2-3	4s ¹ D -4p''' ¹ D°†
910.518	A	15	2.96	16.52	1-2			1010.267	A	30	3.24	15.46	2-2	(65)
892.411	A	50	2.71	16.54	3-3	4s ¹ D -4p'' ¹ D°†		*1008.726	A	30	3.24	15.48	2-1	4s ¹ D -4p''' ¹ P°
894.226	A	40	2.82	16.63	2-2	(41)		977.567	A	25	3.24	15.87	2-3	4s ¹ D -4p''' ¹ F°
*899.791	A	50	2.96	16.68	1-1			974.759	A	20	3.24	15.91	2-2	4s ¹ D -4p'' ¹ P°†
886.946	A	60	2.71	16.63	3-2									(68)
890.567	A	60	2.82	16.68	2-1									
*899.791	A	50	2.82	16.54	2-3									
873.264	A	15	2.71	16.84	3-3	4s ¹ D -4p' ¹ F°†								
871.064	A	8	2.82	16.99	2-2	(42)								
*864.199	A	10d	2.71	16.99	3-2									
878.696	A	50	2.71	16.76	3-3	4s ¹ D -4p' ¹ D°								
877.559	A	20	2.82	16.89	2-2	(43)								
877.839	A	15	2.96	17.03	1-1									
870.544	A	8	2.71	16.89	3-2									
869.062	A	10	2.82	17.03	2-1									
885.842	A	25	2.82	16.76	2-3									
886.515	A	10	2.96	16.89	1-2									
877.007	A	25	2.71	16.78	3-2	4s ¹ D -4p'' ¹ D°								
884.127	A	10	2.82	16.78	2-2	(44)								
876.719	A	20	2.71	16.79	3-3	4s ¹ D -4f ¹ D°								
883.837	A	5	2.82	16.79	2-3	(45)								

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac *958. 149	A	40	3. 24	16. 13	2-2	4s ¹ D -4p''' ¹ D° (70)	Vac 1265. 504	A	15	8. 38	18. 14	1-2	4p ¹ P° -7s ¹ D† (91)
954. 378	A	20	3. 24	16. 18	2-3	4s ¹ D -4p''' ¹ F° (71)	Air						
*925. 125	A	30	3. 24	16. 59	2-1	4s ¹ D -4p ^v ¹ P° (72)	2544. 802	A	90	8. 48	13. 33	4-3	4p ¹ F° -5s ¹ D† (92)
922. 411	A	20	3. 24	16. 63	2-2	4s ¹ D -4p ^v ¹ D° (73)	2506. 270	A	90	8. 45	13. 37	3-2	
897. 790	A	15	3. 24	16. 99	2-2	4s ¹ D -4p' ¹ F° (74)	2485. 787	A	100	8. 63	13. 59	2-1	
884. 430	A	8	3. 24	17. 20	2-3	4s ¹ D -6p ¹ F° (75)	2526. 589	A	60	8. 45	13. 33	3-3	
							2598. 813	A	70	8. 63	13. 37	2-2	
Air							2468. 51	A	50	8. 63	13. 62	2-2	4p ¹ F° -5s ¹ D† (93)
2403. 335	A	100	8. 20	13. 33	2-3	4p ¹ P° -5s ¹ D (76)	*2134. 355	A	35	8. 48	14. 27	4-5	4p ¹ F° -4d ¹ G† (94)
2473. 332	A	50	8. 38	13. 37	1-2		2117. 300	A	40	8. 45	14. 28	3-4	
2424. 436	A	60	8. 50	13. 59	0-1		*2087. 930	A	50	8. 63	14. 54	2-3	
2384. 94	A	15	8. 20	13. 37	2-2		2098. 386	A	30	8. 48	14. 37	4-4	4p ¹ F° -4d ¹ F† (95)
2370. 74	A	80	8. 38	13. 59	1-1		*2087. 930	A	50	8. 45	14. 36	3-3	
2289. 40	A	10	8. 20	13. 59	2-1		2151. 801	A	20	8. 63	14. 36	2-3	
2274. 74	A	45	8. 20	13. 62	2-2	4p ¹ P° -5s ¹ D (77)	Vac						
2355. 02	A	80	8. 38	13. 62	1-2		1541. 701	A	75	8. 48	16. 49	4-3	4p ¹ F° -6s ¹ D (96)
2078. 646	A	40	8. 20	14. 14	2-1	4p ¹ P° -4d ¹ S† (78)	*1531. 832	A	50d	8. 45	16. 51	3-2	
2145. 48	A	10	8. 38	14. 14	1-1		*1519. 832	A	60	8. 63	16. 75	2-1	
2031. 023	A	40	8. 20	14. 28	2-2	4p ¹ P° -4d ¹ P† (79)	1535. 004	A	25	8. 45	16. 49	3-3	
2093. 606	A	20	8. 38	14. 28	1-1		1565. 925	A	40	8. 63	16. 51	2-2	
2029. 93	A	10	8. 20	14. 28	2-1		1569. 216	A	10	8. 63	16. 49	2-3	
2012. 96	A	15	8. 20	14. 33	2-3	4p ¹ P° -4d ¹ D† (80)	*1485. 659	A	40d	8. 45	16. 76	3-2	4p ¹ F° -6s ¹ D (97)
2062. 41	A	20	8. 38	14. 37	1-2		1517. 630	A	20	8. 63	16. 76	2-2	
*2027. 13	A	10	8. 38	14. 47	1-1	4p ¹ P° -4d ¹ P† (81)	1470. 697	A	40	8. 48	16. 88	4-5	4p ¹ F° -5d ¹ G (98)
2066. 25	A	10	8. 50	14. 47	0-1		*1463. 771	A	50d	8. 45	16. 88	3-4	
Vac							1450. 307	A	25	8. 63	17. 14	2-3	
*1488. 638	A	75d	8. 20	16. 49	2-3	4p ¹ P° -6s ¹ D† (82)	1466. 519	A	10	8. 48	16. 90	4-3	4p ¹ F° -5d ¹ D† (99)
1519. 491	A	50	8. 38	16. 51	1-2		1457. 175	A	10	8. 45	16. 92	3-2	
1496. 686	A	35	8. 50	16. 75	0-1		*1463. 771	A	50d	8. 48	16. 92	4-4	4p ¹ F° -5d ¹ F (100)
*1485. 659	A	40d	8. 20	16. 51	2-2		1458. 004	A	30	8. 45	16. 92	3-3	
1442. 136	A	15	8. 20	16. 76	2	4p ¹ P° -6s ¹ D (83)	1443. 541	A	10	8. 63	17. 18	2-2	
1473. 976	A	25	8. 38	16. 76			*1488. 638	A	75d	8. 63	16. 92	2-3?	
1430. 243	A	40	8. 20	16. 83	1	4p ¹ P° -5d ¹ S (84)	1314. 335	A	30	8. 48	17. 88	4-3	4p ¹ F° -7s ¹ D (101)
1461. 556	A	15	8. 38	16. 83	1		1308. 296	A	30	8. 45	17. 89	3-2	
1421. 760	A	25	8. 20	16. 88	2-2	4p ¹ P° -5d ¹ P† (85)	1298. 394	A	15	8. 63	18. 13	2-1	
1452. 291	A	20	8. 38	16. 88	1-1		1309. 463	A	15	8. 45	17. 88	3-3	
1434. 758	A	15	8. 38	16. 99	1-0		*1333. 054	A	20d	8. 63	17. 89	2-2	
1418. 423	A	25	8. 20	16. 90	2-3	4p ¹ P° -5d ¹ D† (86)	1287. 464	A	15	8. 48	18. 07	4-5	4p ¹ F° -6d ¹ G (102)
1445. 982	A	20	8. 38	16. 92	1-2		1282. 450	A	15	8. 45	18. 08	3-4	
1427. 589	A	10	8. 50	17. 15	0-1		1272. 036	A	8	8. 63	18. 33	2-3	
1414. 897	A	10	8. 38	17. 11	1-1	4p ¹ P° -5d ¹ P (87)	Air						
1433. 837	A	10	8. 50	17. 11	0-1		2442. 67	A	15	8. 61	13. 66	4-5	4s ¹ F -4p' ¹ G°† (103)
1407. 160	A	15	8. 38	17. 16	1-2	4p ¹ P° -5d ¹ D (88)	2518. 95	A	8	8. 83	13. 73	3-4	
1275. 570	A	30	8. 20	17. 88	2-3	4p ¹ P° -7s ¹ D† (89)	2180. 74	A	10	8. 61	14. 26	4-5	4s ¹ F -4p'' ¹ G°† (104)
1299. 267	A	10	8. 38	17. 89	1-2		*2189. 621	A	50	8. 61	14. 24	4-4	
1266. 308	A	10	8. 38	18. 13	1-1		Vac						
1250. 045	A	10	8. 20	18. 08	2-2	4p ¹ P° -6d ¹ P† (90)	1957. 51	A	20	8. 61	14. 91	4-4	4s ¹ F -5p ¹ F°† (105)
							1946. 49	A	10	8. 61	14. 95	4-3	4s ¹ F -4p'' ¹ F° (106)
							*1929. 74	A	25d	8. 61	15. 00	4-3	4s ¹ F -5p ¹ D° (107)
							1977. 02	A	15	8. 98	15. 22	2-1	
							*1699. 09	A	30	8. 61	15. 87	4-3	4s ¹ F -4p''' ¹ F°† (108)
							*1753. 27	A	15	8. 83	15. 87	3-2	

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
*1683.15	A	40	8.61	15.94	4-3	4s ² ³ F -4p ^{iv} ³ P°	1427.835	A	20	8.61	17.25	4-3	4s ² ³ F -6p ³ D°†
*1744.80	A	20d†	8.83	15.91	3-2	(109)	1459.412	A	25	8.98	17.44	2-1	(126)
*1753.27	A	15	8.98	16.02	2-1		1466.067	A	20	8.83	17.25	3-3	
1736.54	A	10	8.83	15.94	3-3		1492.837	A	30	8.98	17.25	2-2	
							1492.149	A	10	8.98	17.25	2-3	
1623.17	A	30	8.61	16.21	4-3	4s ² ³ F -4p ^{iv} ¹ D°	1475.846	A	30	8.98	17.34	2-1	4s ² ³ F -4p ^{iv} ¹ P°
*1683.15	A	40	8.83	16.17	3-2	(110)							(127)
*1717.72	A	15	8.98	16.17	2-2†		1398.636	A	10	8.61	17.43	4-3	4s ² ³ F -6p ¹ F°
1672.77	A	10	8.83	16.21	3-3		1435.312	A	10	8.83	17.43	3-3	(128)
1630.27	A	25	8.61	16.18	4-3	4s ² ³ F -4p ^{iv} ¹ F°†	1428.366	A	15	8.83	17.47	3-2	4s ² ³ F -6p ¹ D°
						(111)							(129)
1605.274	A	30	8.83	16.52	3-2	4s ² ³ F -4p ^v ³ P°							
1622.44	A	40	8.98	16.59	2-1	(112)							
1636.61	A	10	8.98	16.52	2-2								
1555.698	A	50	8.61	16.54	4-3	4s ² ³ F -4p ^v ³ D°†	Air						
1583.683	A	60	8.83	16.63	3-2	(113)	2689.299	A	80	8.75	13.33	3-3	4p ³ D° -5s ³ D
1602.250	A	15	8.98	16.68	2-1		2713.505	A	80	8.83	13.37	2-2	(130)
							2703.184	A	100	9.02	13.59	1-1	
1552.641	A	50	8.61	16.56	4-5	4s ² ³ F -4p ^v ³ G°	2666.288	A	50	8.75	13.37	3-2	
1555.134	A	40	8.83	16.77	3-4	(114)	2590.526	A	90	8.83	13.59	2-1	
1553.893	A	25	8.98	16.92	2-3		2737.339	A	10	8.83	13.33	2-3	
1512.174	A	20	8.61	16.77	4-4		2837.364	A	60	9.02	13.37	1-2	
*1525.653	A	10	8.83	16.92	3-3								
1537.560	A	50	8.61	16.63	4-4	4s ² ³ F -4p ^v ³ F°	2529.302	A	100	8.75	13.62	3-2	4p ³ D° -5s ³ D
1540.589	A	30	8.83	16.84	3-3	(115)	2571.746	A	60	8.83	13.62	2-2	(131)
1540.231	A	20	8.98	16.99	2-2								
1581.991	A	40	8.83	16.63	3-4		2230.40	A	10	8.75	14.28	3-4	4p ³ D° -4d ³ G†
1569.426	A	10	8.98	16.84	2-3		2161.314	A	30	8.83	14.54	2-3	(132)
1512.457	A	20	8.83	16.99	3-2								
1514.492	A	50	8.61	16.76	4-3	4s ² ³ F -4p ^v ³ D°†	2231.571	A	30	8.75	14.28	3-2	4p ³ D° -4d ³ P†
1532.124	A	30	8.83	16.89	3-2	(116)	2263.212	A	8	8.83	14.28	2-1	(133)
1533.976	A	25	8.98	17.03	2-1		2348.74	A	15	9.02	14.28	1-1	
1557.583	A	20	8.83	16.76	3-3								
1508.627	A	30	8.61	16.79	4-3	4s ² ³ F -4f ³ D°	2209.795	A	30	8.75	14.33	3-3	4p ³ D° -4d ³ D†
1551.379	A	30	8.83	16.79	3-3	(117)	2226.773	A	40	8.83	14.37	2-2	(134)
1580.025	A	15	8.98	16.79	2-2		*2230.087‡	A	30	9.02	14.56	1-1	
1580.628	A	30	8.98	16.79	2-3								
1505.384	A	20	8.61	16.81	4-4	4s ² ³ F -4f ³ F°†	2195.674	A	25	8.75	14.37	3-4	4p ³ D° -4d ³ F†
1547.950	A	10	8.83	16.81	3-4	(118)	2229.850	A	30	8.83	14.36	2-3	(135)
1579.492	A	30	8.98	16.79	2-3		2200.498	A	25	9.02	14.63	1-2	
1504.755	A	25	8.61	16.81	4-5	4s ² ³ F -4f ³ G°†	2125.098	A	20	8.75	14.55	3-4	4p ³ D° -4d ³ G
1544.674	A	40	8.83	16.82	3-4	(119)							(136)
*1525.794	A	30	8.98	17.07	2-3		2218.504	A	25	9.02	14.59	1-2	4p ³ D° -4d ³ D
1550.644	A	30	8.98	16.94	2-1	4s ² ³ F -4p ^v ¹ P°	*2027.13	A	10	9.02	15.11	1-0	4p ³ D° -4d ³ S
						(120)							(138)
1465.542	A	15	8.61	17.03	4-4	4s ² ³ F -4p ^{vi} ¹ F°†	Vac						
1495.426	A	25	8.83	17.09	3-3	(121)	1593.557	A	60	8.75	16.49	3-3	4p ³ D° -6s ³ D
1508.175	A	25	8.98	17.16	2-2		1606.834	A	40	8.83	16.51	2-2	(139)
1481.541	A	20	8.83	17.16	3-2		1598.402	A	40	9.02	16.75	1-1	
1522.575	A	15	8.98	17.09	2-3		1590.164	A	40	8.75	16.51	3-2	
*1531.832	A	50d	8.98	17.04	2-2	4s ² ³ F -4f ¹ D°	1558.344	A	30	8.83	16.75	2-1	
						(122)	1610.298	A	15	8.83	16.49	2-3	
1499.510	A	10	8.83	17.06	3-4	4s ² ³ F -4f ¹ G°	1649.457	A	25	9.02	16.51	1-2	
						(123)							
1503.368	A	15	8.98	17.19	2-1	4s ² ³ F -6p ³ P°	1540.391	A	30	8.75	16.76	3-2	4p ³ D° -6s ³ D
						(124)							(140)
1434.916	A	25	8.61	17.21	4-4	4s ² ³ F -6p ³ F°	1485.318	A	20	8.83	17.14	2-3	4p ³ D° -5d ³ G†
1474.934	A	20	8.83	17.20	3-3	(125)							(141)
1449.056	A	20	8.98	17.50	2-2		1517.162	A	10	8.75	16.88	3-2	4p ³ D° -5d ³ P
1436.233	A	15	8.61	17.20	4-3		*1531.832	A	50d	8.83	16.88	2-1	(142)
1473.531	A	15	8.83	17.21	3-4								
1501.333	A	10	8.98	17.20	2-3		1513.360	A	20	8.75	16.90	3-3	4p ³ D° -5d ³ D
							1524.857	A	20	8.83	16.92	2-2	(143)
							*1519.832	A	60	9.02	17.15	1-1	

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High			
Vac 1510. 502 *1525. 794 1511. 238	A A A	35 30 10	8. 75 8. 83 9. 02	16. 92 16. 92 17. 18	3-4 2-3 1-2	4p ¹ D° - 5d (144)	¹ F†
1469. 691	A	15	8. 75	17. 15	3-4	4p ¹ D° - 5d (145)	¹ G
1517. 930	A	10	9. 02	17. 16	1-2	4p ¹ D° - 5d (146)	¹ D
1351. 837 1362. 598 1355. 304 1350. 592 1326. 394 1393. 126	A A A A A A	25 20 15 15 10 10	8. 75 8. 83 9. 02 8. 75 8. 83 9. 02	17. 88 17. 89 18. 13 17. 89 18. 13 17. 89	3-3 2-2 1-1 3-2 2-1 1-2	4p ¹ D° - 7s (147)	¹ D
1320. 687	A	10	8. 75	18. 09	3-4	4p ¹ D° - 6d (148)	¹ F†
1314. 147	A	15	8. 75	18. 14	3-2	4p ¹ D° - 7s (149)	¹ D†

Air 2769. 666 2745. 275	A A	70 60	8. 88 8. 88	13. 33 13. 37	3-3 3-2	4p ¹ F° - 5s (150)	¹ D
2600. 266	A	100	8. 88	13. 62	3-2	4p ¹ F° - 5s (151)	¹ D
2286. 642	A	15	8. 88	14. 28	3-2	4p ¹ F° - 4d (152)	¹ P
2263. 780	A	35	8. 88	14. 33	3-3	4p ¹ F° - 4d (153)	¹ D
2248. 960	A	25	8. 88	14. 37	3-4	4p ¹ F° - 4d (154)	¹ F†
2174. 968	A	50	8. 88	14. 55	3-4	4p ¹ F° - 4d (155)	¹ G
2146. 91	A	15	8. 88	14. 63	3-3	4p ¹ F° - 4d (156)	¹ F
Vac 1621. 426 1617. 914	A A	60 20	8. 88 8. 88	16. 49 16. 51	3-3 3-2	4p ¹ F° - 6s (157)	¹ D
1566. 411	A	40	8. 88	16. 76	3-2	4p ¹ F° - 6s (158)	¹ D
*1538. 488	A	10	8. 88	16. 90	3-3	4p ¹ F° - 5d (159)	¹ D
1535. 515	A	15	8. 88	16. 92	3-4	4p ¹ F° - 5d (160)	¹ F
1493. 359	A	25	8. 88	17. 15	3-4	4p ¹ F° - 5d (161)	¹ G
1371. 840	A	20	8. 88	17. 88	3-3	4p ¹ F° - 7s (162)	¹ D†
*1333. 054	A	20d	8. 88	18. 14	3-2	4p ¹ F° - 7s (163)	¹ D

Air 2884. 20 2857. 746 2721. 675	A A A	20 10 100	9. 06 9. 06 9. 06	13. 33 13. 37 13. 59	2-3 2-2 2-1	4p ¹ D° - 5s (164)	¹ D
2700. 963	A	100	9. 06	13. 62	2-2	4p ¹ D° - 5s (165)	¹ D
2212. 741	A	10	9. 06	14. 63	2-2	4p ¹ D° - 4d (166)	¹ F
2230. 948	A	30	9. 06	14. 59	2-2	4p ¹ D° - 4d (167)	¹ D
2215. 100	A	35	9. 06	14. 63	2-3	4p ¹ D° - 4d (168)	¹ F
Vac 1660. 005 1656. 326 1604. 848	A A A	20 20 20	9. 06 9. 06 9. 06	16. 49 16. 51 16. 75	2-3 2-2 2-1	4p ¹ D° - 6s (169)	¹ D
1602. 387	A	40	9. 06	16. 76	2-2	4p ¹ D° - 6s (170)	¹ D
1523. 740	A	10	9. 06	17. 16	2-2	4p ¹ D° - 5d (171)	¹ D
1520. 543	A	20	9. 06	17. 17	2-3	4p ¹ D° - 5d (172)	¹ F
1359. 010	A	20	9. 06	18. 14	2-2	4p ¹ D° - 7s (173)	¹ D

Air 2877. 698 2739. 768	A A	80 70	9. 09 9. 09	13. 37 13. 59	1-2 1-1	4p ¹ P° - 5s (174)	¹ D
2718. 775	A	100	9. 09	13. 62	1-2	4p ¹ P° - 5s (175)	¹ D
2376. 29	A	50	9. 09	14. 28	1-1	4p ¹ P° - 4d (176)	¹ P†
2336. 17	A	20	9. 09	14. 37	1-2	4p ¹ P° - 4d (177)	¹ D†
2224. 701	A	15	9. 09	14. 63	1-2	4p ¹ P° - 4d (178)	¹ F
2290. 998	A	15	9. 09	14. 47	1-1	4p ¹ P° - 4d (179)	¹ P
2047. 65	A	20	9. 09	15. 11	1-0	4p ¹ P° - 4d (180)	¹ S
Vac 1663. 003 1611. 113	A A	30 10	9. 09 9. 09	16. 51 16. 75	1-2 1-1	4p ¹ P° - 6s (181)	¹ D
1608. 638	A	25	9. 09	16. 76	1-2	4p ¹ P° - 6s (182)	¹ D
1582. 849	A	10	9. 09	16. 88	1-1	4p ¹ P° - 5d (183)	¹ P
*1538. 488	A	10	9. 09	17. 11	1-1	4p ¹ P° - 5d (184)	¹ P
1492. 684	A	10	9. 09	17. 36	1-0	4p ¹ P° - 5d (185)	¹ S
1402. 776	A	15	9. 09	17. 89	1-2	4p ¹ P° - 7s (186)	¹ D

Cu III

I P 36.91 Anal A List C December 1951

REFERENCE

A A. G. Shenstone and L. Wilets, Phys. Rev. 83, 104 (1951). W L, I, T, I P

Cu III

Cu III

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Vac							Vac						
802.841	A	150	0.00	15.38	2½-3½	a ² D - z ⁴ F°†	1741.378	A	500d?	8.27	15.36	3½-4½	a ² F - z ² G°
797.566	A	100	0.00	15.48	2½-2½	(1)	1750.391	A	500	8.51	15.57	2½-3½	(17)
793.065	A	100	0.00	15.57	2½-3½	a ² D - z ² G°	1692.706	A	300	8.27	15.57	3½-3½	
788.462	A	300	0.00	15.66	2½-3½	a ² D - z ² F°	1671.886	A	500	8.27	15.66	3½-3½	a ² F - z ² F°†
789.840	A	200	0.28	15.89	1½-2½	(3)	1674.602	A	500	8.51	15.89	2½-2½	(18)
777.125	A	200	0.00	15.89	2½-2½		1728.139	A	200	8.51	15.66	2½-3½	
788.073	A	400	0.00	15.66	2½-2½	a ² D - z ² D°	1670.140	A	500	8.27	15.66	3½-2½	a ² F - z ² D°†
791.371	A	300	0.28	15.86	1½-1½	(4)	1681.481	A	300	8.51	15.86	2½-1½	(19)
778.603	A	50	0.00	15.86	2½-1½		Air						
801.154	A	200	0.28	15.66	1½-2½		2438.47	A	25	9.63	14.67	2½-3½	b ² D - z ² D°†
732.026	A	100	0.00	16.86	2½-2½	a ² D - z ⁴ P°†	2346.17	A	40	9.63	14.89	2½-2½	(20)
719.506	A	150	0.00	17.16	2½-3½	a ² D - y ² F°	Vac						
735.224	A	100	0.26	17.05	1½-2½	(6)	1705.333	A	300	9.63	16.86	2½-2½	b ² D - z ⁴ P°†
715.530	A	200	0.00	17.25	2½-2½	a ² D - y ² D°†	1708.958	A	200	9.63	16.85	2½-1½	(21)
730.365	A	150	0.26	17.16	1½-1½	(7)	1638.956	A	300	9.63	17.16	2½-3½	b ² D - y ² F°
693.510	A	50	0.00	17.80	2½-2½	a ² D - x ² D°†	1686.214	A	300	9.73	17.05	1½-2½	(22)
700.271	A	150	0.26	17.88	1½-1½	(8)	Air						
690.250	A	75	0.00	17.88	2½-1½		2609.31	A	50	9.94	14.67	2½-3½	a ⁴ P - z ² D°†
687.987	A	100	0.00	17.94	2½-1½	a ² D - y ² P°†	2482.34	A	30	9.91	14.89	1½-2½	(23)
691.557	A	100	0.26	18.11	1½-0½	(9)	2412.32	A	15	9.93	15.04	0½-1½	
676.564	A	300	0.00	18.25	2½-3½	a ² D - x ² F°	2497.58	A	20	9.94	14.89	2½-2½	
682.171	A	200	0.26	18.35	1½-2½	(10)	2405.49	A	20	9.91	15.04	1½-1½	
672.659	A	50	0.00	18.35	2½-2½		Vac						
1722.379	A	1000	7.51	14.67	4½-3½	a ⁴ F - z ² D°†	1689.051	A	200	9.94	17.25	2½-2½	a ⁴ P - y ² D°†
1709.036	A	700	7.66	14.89	3½-2½	(11)	1605.969	A	300	9.94	17.63	2½-3½	a ⁴ P - y ² D°†
1702.994	A	500	7.80	15.04	2½-1½		1609.757	A	100	9.91	17.58	1½-2½	(25)
1702.102	A	400	7.89	15.14	1½-0½		1610.571	A	75	9.93	17.59	0½-1½	
1642.208	A	2000	7.51	15.02	4½-5½	a ⁴ F - z ² G°†	*1607.542	A	100	9.91	17.59	1½-1½	
1687.134	A	600	7.66	14.98	3½-4½	(12)	1609.599	A	50	9.93	17.60	0½-0½	
1684.642	A	500	7.80	15.12	2½-3½		Vac						
1679.151	A	400	7.89	15.24	1½-2½		1702.190	A	300	10.55	17.80	1½-2½	a ² P - x ² D°
1652.010	A	300	7.51	14.98	4½-4½		1702.349	A	30	10.63	17.88	0½-1½	(26)
1654.574	A	300	7.66	15.12	3½-3½		1682.695	A	30	10.55	17.88	1½-1½	
1658.472	A	200	7.80	15.24	2½-2½		1688.618	A	100	10.63	17.94	0½-1½	a ² P - y ² P°†
1593.758	A	1000	7.51	15.25	4½-4½	a ⁴ F - z ⁴ F°†	*1607.542	A	100	10.55	18.23	1½-0½	a ² P - z ² S°†
1600.194	A	500	7.66	15.38	3½-3½	(13)	Air						
1606.730	A	300	7.80	15.48	2½-2½		2643.92	A	40	10.99	15.66	4½-3½	a ² G - z ² F°
1616.607	A	300	7.89	15.52	1½-1½		2522.36	A	25	10.99	15.89	3½-2½	(29)
1626.411	A	200	7.66	15.25	3½-4½		Vac						
1628.295	A	300	7.80	15.38	2½-3½		1705.633	A	400	10.99	18.23	4½-5½	a ² G - z ² H°†
1626.139	A	200	7.89	15.48	1½-2½		1739.508	A	300	10.99	18.09	3½-4½	(30)
1603.146	A	400	7.66	15.36	3½-4½	a ⁴ F - z ² G°†	1701.023	A	400	10.99	18.25	4½-3½	a ² G - x ² F°
1840.917	A	200	8.27	14.98	3½-4½	(14)	1677.373	A	200	10.99	18.35	3½-2½	(31)
1867.747	A	50	8.51	15.12	2½-3½	a ² F - z ² G°	1543.438	A	500	10.99	18.99	4½-4½	a ² G - y ² G°†
1768.869	A	200	8.27	15.25	3½-4½	a ² F - z ⁴ F°	1548.867	A	300	10.99	18.96	3½-3½	(32)

ZINC, $Z=30$

Zn I

I P 9.35 Anal A List C March 1950

REFERENCES

- A C. W. Hetzler, R. W. Boreman, and K. Burns, *Phys. Rev.* **48**, 656 (1935). W L, I, T
 B See A. Fowler, *Report on Series in Line Spectra* p. 139 (Fleetway Press, London, 1922). W L, (I), T

Zn I

Zn I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2138.56	A	100R	0.00	5.77	0-1	$4s^2\ ^1S - 4p\ ^1P^o$ (1)	Air 2800.869	A	80	4.06	8.47	2-3	$4p\ ^1P^o - 5\ ^1D^{\dagger}$ (5)
Vac 1632.11	B	(4)	0.00	7.56	0-1	$4s^2\ ^1S - 5p\ ^1P^o$ (2)	2770.865	A	80	4.01	8.47	1-2	
							2756.452	A	60	3.99	8.47	0-1	
							2801.056	A	15	4.06	8.47	2-2	
							2770.984	A	25	4.01	8.47	1-1	
1589.76	B	(10)	0.00	7.77	0-1	$4s^2\ ^1S - 5p\ ^1P^o$ (3)	2712.488	A	10	4.06	8.61	2-1	$4p\ ^1P^o - 7s\ ^1S$ (6)
1457.572	P	(4)	0.00	8.47	0-1	$4s^2\ ^1S - 6p\ ^1P^o$ (4)	2684.161	A	6	4.01	8.61	1-1	
							2670.530	A	2	3.99	8.61	0-1	
							2608.558	A	30	4.06	8.79	2-3	$4p\ ^1P^o - 6d\ ^1D^{\dagger}$ (7)
							2582.440	A	7	4.01	8.79	1-2	
							2569.871	A	8	3.99	8.79	0-1	
							2567.80	B	(6r)	4.06	8.87	2-1	$4p\ ^1P^o - 8s\ ^1S$ (8)
							2542.32	B	(6r)	4.01	8.87	1-1	
							2530.09	B	(2r)	3.99	8.87	0-1	

Zn II

I P 17.89 Anal B List C February 1950

REFERENCES

- A C. W. Hetzler, R. W. Boreman, and K. Burns, Phys. Rev. **48**, 657 (1935). W L
 B A. G. Shenstone and L. E. Gibson, unpublished material (February 1950). W L, T
 See F. A. Saunders, Astroph. J. **43**, 239 (1917). I
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 R. J. Lang, Proc. Nat. Acad. Sci. **15**, 414 (1929). I
 Y. Takahashi, Ann. der Phys. [5] **3**, 27 (1929). I, T

Zn II

Zn II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2025. 512	3	10	0. 00	6. 09	$0\frac{1}{2}-1\frac{1}{2}$	$4s\ ^3S-4p\ ^3P^o$	1535. 05	B	20	6. 09	14. 13	$1\frac{1}{2}-0\frac{1}{2}$	$4p\ ^3P^o-6s\ ^3S$
2062. 016	B	9	0. 00	5. 98	$0\frac{1}{2}-0\frac{1}{2}$	(1)	1514. 75	B	10	5. 98	14. 13	$0\frac{1}{2}-0\frac{1}{2}$	(5)
Vac							1456. 90	B	50	6. 09	14. 57	$1\frac{1}{2}-2\frac{1}{2}$	$4p\ ^3P^o-5d\ ^3D$
984. 16	B	1	0. 00	12. 54	$0\frac{1}{2}-1\frac{1}{2}$	$4s\ ^3S-5p\ ^3P^o$	1439. 10	B	30	5. 98	14. 56	$0\frac{1}{2}-1\frac{1}{2}$	(6)
986. 54	B	1	0. 00	12. 51	$0\frac{1}{2}-0\frac{1}{2}$	(2)	1457. 40	B	10	6. 09	14. 56	$1\frac{1}{2}-1\frac{1}{2}$	
Air							Air						
2557. 958	A	8	6. 09	10. 92	$1\frac{1}{2}-0\frac{1}{2}$	$4p\ ^3P^o-5s\ ^3S$	2570. 66	B	2	7. 74	12. 54	$2\frac{1}{2}-1\frac{1}{2}$	$4s\ ^3D-5p\ ^3P^o$
2502. 001	A	7	5. 98	10. 92	$0\frac{1}{2}-0\frac{1}{2}$	(3)	2782. 82	B	1. 5	8. 08	12. 51	$1\frac{1}{2}-0\frac{1}{2}$	(7)
							2763. 93	B	0	8. 08	12. 54	$1\frac{1}{2}-1\frac{1}{2}$	
2099. 88	B	9	6. 09	11. 96	$1\frac{1}{2}-2\frac{1}{2}$	$4p\ ^3P^o-4d\ ^3D$	1833. 48	B	1. 5	7. 74	14. 48	$2\frac{1}{2}-3\frac{1}{2}$	$4s\ ^3D-4f\ ^3F^o$
2064. 245	B	7	5. 98	11. 97	$0\frac{1}{2}-1\frac{1}{2}$	(4)	1929. 67	B	1	8. 08	14. 48	$1\frac{1}{2}-2\frac{1}{2}$	(8)
2102. 173	B	3	6. 09	11. 97	$1\frac{1}{2}-1\frac{1}{2}$								

GALLIUM, Z=31

Ga I

I P 5.97 Anal A List B November 1951

REFERENCES

- A H. S. Uhler and J. W. Tanch, *Astroph. J.* **55**, 295 (1922). W L, I
 B R. A. Sawyer and R. J. Lang, *Phys. Rev.* **34**, 718 (1929). W L, (I), T
 C E. Klein, *Astroph. J.* **56**, 373 (1922). W L, (I)
 A. Fowler, *Report on Series in Line Spectra* p. 158 (Fleetway Press, London, 1922). I P, T
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Ga I

Ga I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2943. 639	A	6	0. 10	4. 29	1½-2½	4p ³P°-4d ³D	2632. 66	B	10	0. 00	4. 69	0½-0½	4p ³P°-4p² ¹P
2874. 240	A	6	0. 00	4. 29	0½-1½	(1)	2691. 29	B	8	0. 10	4. 69	1½-0½	(3)—Continued
2944. 175	A	6	0. 10	4. 29	1½-1½								
2719. 664	A	3	0. 10	4. 64	1½-0½	4p ³P°-6s ³S	2500. 187	A	7	0. 10	5. 04	1½-2½	4p ³P°-5d ³D
2659. 873	A	3	0. 00	4. 64	0½-0½	(2)	2450. 078	A	6	0. 00	5. 04	0½-1½	(4)
							2500. 714	A	3	0. 10	5. 04	1½-1½	
2624. 82	B	8	0. 10	4. 80	1½-2½	4p ³P°-4p² ¹P	2418. 69	C	(4)	0. 10	5. 20	1½-0½	4p ³P°-7s ³S
2607. 47	B	5	0. 00	4. 73	0½-1½	(3)	2371. 29	C	(3)	0. 00	5. 20	0½-0½	(5)
2665. 05	B	10	0. 10	4. 73	1½-1½								

Ga II

I P 20.43 Anal B List C January 1952

REFERENCE

- A R. A. Sawyer and R. J. Lang, *Phys. Rev.* **34**, 712 (1929). W L, I, T, I P

Ga II

Ga II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2091. 34	A	20	0. 00	5. 90	0-1	4s² ¹S -4p ³P°	1186. 81	A	3	6. 02	16. 42	2-1	4p ³P°-6s ³S
						(1)	1173. 78	A	2	5. 90	16. 42	1-1	(6)
Vac							1167. 62	A	1	5. 85	16. 42	0-1	
1414. 44†	A	20	0. 00	8. 73	0-1	4s² ¹S -4p ¹P°	1033. 69	A	8	6. 02	17. 96	2-1	4p ³P°-7s ³S
						(2)	1023. 80	A	5	5. 90	17. 96	1-1	(7)
829. 60	A	2	0. 00	14. 88	0-1	4s² ¹S -5p ¹P°	1019. 10	A	3	5. 85	17. 96	0-1	
						(3)							
1845. 30	A	15	6. 02	12. 71	2-1	4p ³P°-5s ³S	Air						
1813. 98	A	10	5. 90	12. 71	1-1	(4)	2780. 15	A	15	8. 73	13. 17	1-0	4p ¹P°-5s ¹S
1799. 42	A	5	5. 85	12. 71	0-1								(8)
1535. 40	A	8	6. 02	14. 06	2-3	4p ³P°-4d ³D†	2700. 47	A	20	8. 73	13. 30	1-2	4p ¹P°-4d ¹D
1514. 57	A	5	5. 90	14. 05	1-2	(5)							(9)
1505. 01	A	3	5. 85	14. 05	0-1								
1536. 37	A	5	6. 02	14. 05	2-2								

GERMANIUM, $Z=32$

Ge I

I P 7.85 Anal B List C May 1950

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 C K. R. Rao, Proc. Roy. Soc. (London) [A] **124**, 465 (1929). W L, (I), T
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Ge I

Ge I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Air														
2651. 184†	A	30	0. 17	4. 83	2-2	$4p^2\ ^1P - 5s\ ^1P^{\circ}$ (1)	2314. 20	B	10	0. 88	6. 21	2-3	$4p^2\ ^1D - 4d\ ^1F^{\circ}$ (10)	
2691. 351	A	30	0. 07	4. 65	1-1		2327. 92	B	15	0. 88	6. 18	2-2		
2754. 596	A	50	0. 17	4. 65	2-1		2198. 73	B	15R	0. 88	6. 49	2-3	$4p^2\ ^1D - 4d\ ^1F^{\circ}$ (11)	
2709. 631	A	40	0. 07	4. 62	1-0		2186. 46	B	5	0. 88	6. 52	2-1		
2592. 548	A	30	0. 07	4. 83	1-2		2124. 76	B	5	0. 88	6. 69	2-1	$4p^2\ ^1D - 6s\ ^1P^{\circ}$ (13)	
2651. 580	A	20	0. 00	4. 65	0-1	2057. 25	B	5R	0. 88	6. 88	2-2			
2589. 201	A	12	0. 17	4. 94	2-1	$4p^2\ ^1P - 5s\ ^1P^{\circ}$ (2)	2011. 31	B	4R	0. 88	7. 02	2-3	$4p^2\ ^1D - 5d\ ^1F^{\circ}$ (15)	
2533. 241	A	15	0. 07	4. 94	1-1		Vac							
2497. 974	A	15	0. 00	4. 94	0-1		1962. 11	C	6R	0. 88	7. 17	2-2	$4p^2\ ^1D - 4p^3\ ^1D^{\circ}$ (16)	
2094. 27	B	10R	0. 17	6. 07	2-3		1929. 89	C	4R	0. 88	7. 28	2-3		
2068. 66	B	9R	0. 07	6. 03	1-2		$4p^2\ ^1P - 4d\ ^1D^{\circ}$ (3)	1923. 52	C	(5)	0. 88	7. 30	2-1	$4p^2\ ^1D - 7s\ ^1P^{\circ}$ (18)
2041. 72	B	8R	0. 00	6. 04	0-1	*1860. 10§		D	3	0. 88	7. 52	2-2		
2105. 83	B	5	0. 17	6. 03	2-2	1846. 97		D	2	0. 88	7. 56	2-3	$4p^2\ ^1D - 6d\ ^1F^{\circ}$ (20)	
2065. 22	B	6R	0. 07	6. 04	1-1	Air								
2102. 26	B	3	0. 17	6. 04	2-1	$4p^2\ ^1P - 4d\ ^1F^{\circ}$ (4)		2829. 012	A	9	2. 02	6. 38	0-1	$4p^2\ ^1S - 4d\ ^1P^{\circ}$ (21)
2043. 79	B	7R	0. 17	6. 21	2-3		2793. 935	A	10	2. 02	6. 44	0-1		
2019. 08	B	6R	0. 07	6. 18	1-2		2740. 436	A	20	2. 02	6. 52	0-1	$4p^2\ ^1S - 6s\ ^1P^{\circ}$ (22)	
2054. 46	B	5	0. 17	6. 18	2-2		2644. 192	A	8	2. 02	6. 69	0-1		
Vac							2556. 288	A	10	2. 02	6. 85	0-1	$4p^2\ ^1S - 4p^3\ ^1P^{\circ}$ (25)	
1998. 91	C	7R	0. 17	6. 35	2-2	$4p^2\ ^1P - 4d\ ^1P^{\circ}$ (5)	Air							
1955. 14	C	4R	0. 07	6. 38	1-1		2417. 375	A	20	0. 88	5. 98	2-2	$4p^2\ ^1D - 4d\ ^1D^{\circ}$ (8)	
1988. 28	C	4R	0. 17	6. 38	2-1		2379. 14	B	12	0. 88	6. 07	2-3		
1944. 66	C	2R	0. 07	6. 42	1-0		2394. 09	B	4	0. 88	6. 03	2-2	$4p^2\ ^1D - 4d\ ^1D^{\circ}$ (9)	
1965. 39	C	(4)	0. 07	6. 35	1-2		2389. 48	B	5	0. 88	6. 04	2-1		
1934. 08	C	(4)	0. 00	6. 38	0-1	$4p^2\ ^1P - 6s\ ^1P^{\circ}$ (6)	Air							
1904. 72	D	5	0. 17	6. 66	2-2		2379. 14	B	12	0. 88	6. 07	2-3	$4p^2\ ^1D - 4d\ ^1D^{\circ}$ (9)	
1938. 32	C	(6)	0. 07	6. 44	1-1		2394. 09	B	4	0. 88	6. 03	2-2		
1970. 89	C	(6)	0. 17	6. 44	2-1		2389. 48	B	5	0. 88	6. 04	2-1	$4p^2\ ^1D - 4d\ ^1D^{\circ}$ (9)	
1937. 49	C	(6)	0. 07	6. 44	1-0		Air							
1874. 27	D	3	0. 07	6. 66	1-2	$4p^2\ ^1P - 5d\ ^1D^{\circ}\dagger$ (7)	2417. 375	A	20	0. 88	5. 98	2-2		
1917. 62	C	(5)	0. 00	6. 44	0-1		2379. 14	B	12	0. 88	6. 07	2-3	$4p^2\ ^1D - 4d\ ^1D^{\circ}$ (9)	
1842. 43	D	2	0. 17	6. 87	2-3		2394. 09	B	4	0. 88	6. 03	2-2		
1824. 33	D	2	0. 07	6. 84	1-2		2389. 48	B	5	0. 88	6. 04	2-1	$4p^2\ ^1D - 4d\ ^1D^{\circ}$ (9)	
1802. 66	D	1	0. 00	6. 85	0-1		Air							
Air							2417. 375	A	20	0. 88	5. 98	2-2		

Ge II

I P 15.87 Anal A List B November 1951

REFERENCES

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 R. J. Lang, Phys. Rev. **34**, 697 (1929). W L, (I), T

Ge II

Ge II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1938.00	A	10	0.22	6.59	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2\ ^1P^\circ-4p^2\ ^1P$	1191.24	A	4	6.46	16.82	$1\frac{1}{2}-1\frac{1}{2}$	$4p^2\ ^1P^\circ-4p^2\ ^1S^\circ+$
1912.39	A	2	0.00	6.46	$0\frac{1}{2}-1\frac{1}{2}$	(1)	1181.18	A	7	6.37	16.82	$0\frac{1}{2}-1\frac{1}{2}$	(11)
1979.29	A	20	0.22	6.46	$1\frac{1}{2}-1\frac{1}{2}$								
1938.90	A	20	0.00	6.37	$0\frac{1}{2}-0\frac{1}{2}$								
Air							Air						
2007.05	A	45	0.22	6.37	$1\frac{1}{2}-0\frac{1}{2}$		2845.516	A	15	8.05	12.38	$2\frac{1}{2}-$	$4p^2\ ^1D-4f\ ^2F^\circ$
Vac							2831.845	A	10	8.03	12.38	$1\frac{1}{2}-2\frac{1}{2}$	(12)
1649.20†	A	60	0.22	7.70	$1\frac{1}{2}-0\frac{1}{2}$	$4p^2\ ^1P^\circ-5s\ ^2S$	2205.85	A	9	8.05	13.64	$2\frac{1}{2}-$	$4p^2\ ^1D-5f\ ^2F^\circ$
1602.52	A	15	0.00	7.70	$0\frac{1}{2}-0\frac{1}{2}$	(2)	2197.64	A	6	8.03	13.64	$1\frac{1}{2}-2\frac{1}{2}$	(13)
1576.89	A	40	0.22	8.05	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2\ ^1P^\circ-4p^2\ ^1D$							
1538.11	A	20	0.00	8.03	$0\frac{1}{2}-1\frac{1}{2}$	(3)	Vac						
1581.08	A	20	0.22	8.03	$1\frac{1}{2}-1\frac{1}{2}$		1966.33	A	8	8.05	14.33	$2\frac{1}{2}-$	$4p^2\ ^1D-6f\ ^2F^\circ$
1261.91	A	40	0.22	10.00	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2\ ^1P^\circ-4d\ ^1D$	1959.78	A	6	8.03	14.33	$1\frac{1}{2}-2\frac{1}{2}$	(14)
1237.06	A	20	0.00	9.98	$0\frac{1}{2}-1\frac{1}{2}$	(4)							
1264.71	A	10	0.22	9.98	$1\frac{1}{2}-1\frac{1}{2}$		Air						
1106.76	A	9	0.22	11.37	$1\frac{1}{2}-1\frac{1}{2}$	$4p^2\ ^1P^\circ-4p^2\ ^1P$	2834.275	A	1	9.80	14.15	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^1P^\circ-8s\ ^2S$
1098.71	A	7	0.00	11.24	$0\frac{1}{2}-0\frac{1}{2}$	(5)	2805.673	A	3	9.75	14.15	$0\frac{1}{2}-0\frac{1}{2}$	(15)
1120.49	A	8	0.22	11.24	$1\frac{1}{2}-0\frac{1}{2}$		2729.770	A	2	9.80	14.32	$1\frac{1}{2}-2\frac{1}{2}$	$5p\ ^1P^\circ-7d\ ^1D$
1085.50	A	5	0.00	11.37	$0\frac{1}{2}-1\frac{1}{2}$		2704.030	A	2	9.75	14.32	$0\frac{1}{2}-1\frac{1}{2}$	(16)
1075.06	A	7	0.22	11.70	$1\frac{1}{2}-0\frac{1}{2}$	$4p^2\ ^1P^\circ-6s\ ^2S$	2730.6	A	3	9.80	14.32	$1\frac{1}{2}-1\frac{1}{2}$	
1055.02	A	5	0.00	11.70	$0\frac{1}{2}-0\frac{1}{2}$	(6)	2553.08	A	3	9.80	14.63	$1\frac{1}{2}-0\frac{1}{2}$	$5p\ ^1P^\circ-9s\ ^2S$
1016.64	A	9	0.22	12.36	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2\ ^1P^\circ-5d\ ^1D$	2529.85	A	2	9.75	14.63	$0\frac{1}{2}-0\frac{1}{2}$	(17)
999.11	A	8	0.00	12.36	$0\frac{1}{2}-1\frac{1}{2}$	(7)	2500.54	A	3	9.80	14.73	$1\frac{1}{2}-2\frac{1}{2}$	$5p\ ^1P^\circ-8d\ ^1D$
1017.09	A	4	0.22	12.36	$1\frac{1}{2}-1\frac{1}{2}$		2501.00	A	2	9.80	14.73	$1\frac{1}{2}-1\frac{1}{2}$	(18)
920.57	A	8d	0.22	13.63	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2\ ^1P^\circ-6d\ ^1D$							
905.98	A	6	0.00	13.63	$0\frac{1}{2}-1\frac{1}{2}$	(8)	2853.956	A	2	10.00	14.33	$2\frac{1}{2}-3\frac{1}{2}$	$4d\ ^1D-6f\ ^2F^\circ$
875.51	A	7	0.22	14.32	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2\ ^1P^\circ-7d\ ^1D$	2839.670	A	1	9.98	14.33	$1\frac{1}{2}-2\frac{1}{2}$	(19)
862.23	A	5	0.00	14.32	$0\frac{1}{2}-1\frac{1}{2}$	(9)							
1401.29	A	10	6.59	15.40	$2\frac{1}{2}-2\frac{1}{2}$	$4p^2\ ^1P^\circ-5s\ ^1P^\circ$							
*1406.19	A	5	6.46	15.23	$1\frac{1}{2}-1\frac{1}{2}$	(10)							
1427.85	A	5	6.37	15.15	$0\frac{1}{2}-0\frac{1}{2}?$								
1420.39	A	4	6.59	15.23	$2\frac{1}{2}-1\frac{1}{2}$								
1380.43	A	8	6.46	15.15	$1\frac{1}{2}-0\frac{1}{2}?$								
1392.27	A	4	6.46	15.40	$1\frac{1}{2}-2\frac{1}{2}$								
	A	4	6.37	15.23	$0\frac{1}{2}-1\frac{1}{2}$								

As II

I P 20.1 Anal C List C January 1951

REFERENCE

A A. S. Rao, Ind. J. Phys. 7, 561 (1932). W L, I, T

As II

As II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1394.61	A	4	0.31	9.17	2-3	$4p^3\ ^1P-4p^3\ ^3D^o$	1369.78	A	5	1.25	10.26	2-1	$4p^3\ ^1D-4p^3\ ^1P^o$
1373.65	A	4	0.13	9.12	1-2	(1)							(5)
1356.02	A	3	0.00	9.10	0-1		1094.20	A	6	1.25	12.53	2-1	$4p^3\ ^1D-4d\ ^1P^o$
1266.36†	A	10	0.31	10.06	2-2	$4p^3\ ^1P-5s\ ^1P^o$							(6)
1281.01	A	8	0.13	9.77	1-1	(2)	1082.40	A	10	1.25	12.65	2-2	$4p^3\ ^1D-4d\ ^1D^o$
1305.72	A	10	0.31	9.77	2-1								(7)
1287.57	A	9	0.13	9.72	1-0		1002.27	A	8	1.25	13.56	2-3	$4p^3\ ^1D-4d\ ^1F^o$
1243.09	A	8	0.13	10.06	1-2								(8)
1263.78	A	10	0.00	9.77	0-1								
1021.96	A	10	0.31	12.39	2-3	$4p^3\ ^1P-4d\ ^3D^o$	1660.60	A	8	2.79	10.22	0-1	$4p^3\ ^1S-5s\ ^1P^o$
1015.38	A	10	0.13	12.29	1-2	(3)							(9)
1009.44	A	8	0.00	12.23	0-1		1267.61	A	10	2.79	12.53	0-1	$4p^3\ ^1S-4d\ ^1^o$
1030.84	A	2	0.31	12.29	2-2								(10)
1020.39	A	6	0.13	12.23	1-1								
1375.07	A	10	1.25	10.22	2-1	$4p^3\ ^1D-5s\ ^1P^o$							
						(4)							

SELENIUM, $Z=34$

Se I

I P 9.71 Anal B List C October 1950

REFERENCE

A J. E. Ruedy and R. C. Gibbs, Phys. Rev. **46**, 880 (1934). W L, I, T

Se I

Se I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2074. 793 2164. 160	A A	50 50	0. 00 0. 25	5. 95 5. 95	2-2 1-2	$4p^4 \ ^3P-5s \ ^3S^{\circ}$ (1)	Vac 1395. 88 1435. 75	A A	10 12	0. 00 0. 25	8. 84 8. 84	2-2 1-2	$4p^4 \ ^3P-7s \ ^3S^{\circ}$ (10)
Vac 1960. 901 † Air 2039. 851 2062. 788	A A A A	50 50 50 40	0. 00 0. 25 0. 31	6. 30 6. 30 6. 30	2-1 1-1 0-1	$4p^4 \ ^3P-5s \ ^3S^{\circ}$ (2)	1377. 98 1416. 84	A A	10 8	0. 00 0. 25	8. 96 8. 96	2-1 1-1	$4p^4 \ ^3P-5s'' \ ^1P^{\circ}$ (11)
Vac 1606. 46 1671. 15 1690. 70 1617. 35 1675. 27 1621. 21	A A A A A A	25 25 25 20 25 15	0. 00 0. 25 0. 31 0. 00 0. 25 0. 00	7. 68 7. 63 7. 61 7. 63 7. 61 7. 61	2-3 1-2 0-1 2-2 1-1 2-1	$4p^4 \ ^3P-5s' \ ^3D^{\circ}$ (3)	Air 2413. 517	A	60	1. 18	6. 30	2-1	$4p^4 \ ^1D-5s \ ^3S^{\circ}$ (12)
1577. 61 1629. 06 1643. 39 1577. 90 1628. 85	A A A A A	15 6 15 15 8	0. 00 0. 25 0. 31 0. 00 0. 25	7. 83 7. 82 7. 82 7. 82 7. 82	2-3 1-2 0-1 2-2 1-1	$4p^4 \ ^3P-4d \ ^3D^{\circ} \dagger$ (4)	Vac 1898. 555 1913. 788 1919. 190	A A A	40 35 30	1. 18 1. 18 1. 18	7. 68 7. 63 7. 61	2-3 2-2 2-1	$4p^4 \ ^1D-5s' \ ^3D^{\circ}$ (13)
1575. 26 1626. 25	A A	15 12	0. 00 0. 25	7. 84 7. 84	2-2 1-2	$4p^4 \ ^3P-5s' \ ^1D^{\circ}$ (5)	1858. 84	A	25	1. 18	7. 82	2-2	$4p^4 \ ^1D-4d \ ^3D^{\circ}$ (14)
1530. 39 1580. 04 1593. 19 1531. 84 1579. 49 1531. 33	A A A A A A	25 20 15 20 15 15	0. 00 0. 25 0. 31 0. 00 0. 25 0. 00	8. 07 8. 06 8. 06 8. 06 8. 06 8. 06	2-3 1-2 0-1 2-2 1-1 2-1	$4p^4 \ ^3P-4d \ ^3D^{\circ}$ (6)	1855. 20	A	30	1. 18	7. 84	2-2	$4p^4 \ ^1D-5s' \ ^1D^{\circ}$ (15)
1500. 91 1547. 12 1560. 28	A A A	15 12 12	0. 00 0. 25 0. 31	8. 22 8. 22 8. 22	2-1 1-1 0-1	$4p^4 \ ^3P-6s \ ^3S^{\circ}$ (7)	1793. 29 1795. 28	A A	25 30	1. 18 1. 18	8. 07 8. 06	2-3 2-2	$4p^4 \ ^1D-4d \ ^3D^{\circ} \dagger$ (16)
1395. 43 1444. 85 1404. 45 1449. 16 1435. 28 1456. 31	A A A A A A	10 10 8 15 12 12	0. 00 0. 25 0. 00 0. 25 0. 25 0. 31	8. 85 8. 79 8. 79 8. 76 8. 85 8. 79	2-2 1-1 2-1 1-0 1-2 0-1	$4p^4 \ ^3P-5s'' \ ^1P^{\circ}$ (8)	1610. 72 1622. 73	A A	10 10	1. 18 1. 18	8. 85 8. 79	2-2 2-1	$4p^4 \ ^1D-5s'' \ ^1P^{\circ}$ (17)
1405. 37 1446. 98 1458. 29 1406. 60 1446. 78 1406. 37	A A A A A A	10 10 8 10 10 10	0. 00 0. 25 0. 31 0. 00 0. 25 0. 00	8. 78 8. 78 8. 78 8. 78 8. 78 8. 78	2-3 1-2 0-1 2-2 1-1 2-1	$4p^4 \ ^3P-5d \ ^3D^{\circ}$ (9)	1611. 26	A	10	1. 18	8. 84	2-2	$4p^4 \ ^1D-7s \ ^3S^{\circ}$ (18)
							1587. 46	A	15	1. 18	8. 96	2-1	$4p^4 \ ^1D-5s'' \ ^1P^{\circ}$ (19)
							Air 2547. 98	A	30	2. 77	7. 61	0-1	$4p^4 \ ^1S-5s' \ ^3D^{\circ}$ (20)
							2332. 81	A	15	2. 77	8. 06	0-1	$4p^4 \ ^1S-4d \ ^3D^{\circ}$ (21)
							Vac 1995. 11	A	15	2. 77	8. 96	0-1	$4p^4 \ ^1S-5s'' \ ^1P^{\circ}$ (22)

Se II

I P 21.4 Anal B List C January 1952

REFERENCE

A D. C. Martin, Phys. Rev. 48, 938 (1935). W L, I, T, I P

Se II

Se II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1192.29†	A	10	0.00	10.35	1½-2½	4p³ ¹S° - 4p¹ ¹P	912.89	A	9	1.70	15.22	2½-1½	4p³ ²D° - 17†
1168.53	A	8	0.00	10.56	1½-1½	(1)							(12)
1156.91	A	8	0.00	10.67	1½-0½		832.74	A	9	1.70	16.53	2½-2½	4p³ ²D° - 24
							828.48	A	8	1.63	16.53	1½-2½	(13)
1013.40	A	9	0.00	12.18	1½-2½	4p³ ¹S° - 5s ¹P							
1033.60	A	10	0.00	11.94	1½-1½	(2)							
1049.65	A	10	0.00	11.76	1½-0½								
983.94	A	6	0.00	12.55	1½-2½	4p³ ¹S° - 5	1290.97	A	8	2.95	12.51	1½-1½	4p³ ²P° - 5s ²P†
						(3)	1318.25	A	7	2.84	12.21	0½-0½	(14)
906.63	A	8	0.00	13.62	1½-2½	4p³ ¹S° - 11	1308.89	A	8	2.95	12.38	1½-1½	4p³ ²P° - 4p¹ ¹P
						(4)	1294.41	A	3	2.84	12.38	0½-1½	(15)
726.41	A	0	0.00	17.00	1½-2½	4p³ ¹S° - 6s ¹P	1234.88	A	7	2.95	12.95	1½-1½	4p³ ²P° - 7
737.30	A	0	0.00	16.74	1½-1½	(5)	1221.94	A	2	2.84	12.95	0½-1½	(16)
746.02	A	0	0.00	16.55	1½-0½								
709.57	A	7	0.00	17.40	1½-2½	4p³ ¹S° - 30	1218.27	A	2	2.95	13.08	1½-0½	4p³ ²P° - 9
						(6)	1205.69	A	7	2.84	13.08	0½-0½	(17)
1141.94	A	9	1.70	12.51	2½-1½	4p³ ²D° - 5s ²P†	Air						
1166.53	A	5	1.63	12.21	1½-0½	(7)	2895.88	A	6	10.35	14.62	2½-2½	4p¹ ¹P - 5p ¹P°
							3204.58	A	5	10.56	14.42	1½-1½	(18)
1155.99	A	7	1.70	12.38	2½-1½	4p³ ²D° - 4p¹ ²P	3038.66	A	7	10.35	14.42	2½-1½	
						(8)	3639.40	A	2	10.56	13.96	1½-0½	
							3046.24	A	4	10.56	14.62	1½-2½	
1097.82	A	8	1.70	12.95	2½-1½	4p³ ²D° - 7†	3108.54	A	3	10.56	14.53	1½-1½	4p¹ ¹P - 5p ²D°
						(9)	2952.28	A	6	10.35	14.53	2½-1½	(19)
1057.41	A	9	1.70	13.38	2½-2½	4p³ ²D° - 5s' ²D†	2872.08	A	2	10.56	14.86	1½-2½	
						(10)							
1014.01	A	9	1.70	13.88	2½-1½	4p³ ²D° - 12	2821.52	A	5	10.35	14.73	2½-1½	4p¹ ¹P - 5p ¹S°
						(11)	2963.91	A	6	10.56	14.73	1½-1½	(20)
							3041.31	A	7	10.67	14.73	0½-1½	

BROMINE, $Z=35$

Br I

I P 11.80 Anal A List A January 1951

REFERENCES

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 C. C. Kiess and T. L. de Bruin, Bur. Std. J. Research **4**, 667, RP172 (1930). T
 * and §§ = Blend with I

Br I

Br I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1576.5	A	6	0.00	7.83	$1\frac{1}{2}-2\frac{1}{2}$	$4p^2 \text{ } ^1P^o-5s \text{ } ^1P$ (1)	1488.6†	A	8	0.00	8.29	$1\frac{1}{2}-1\frac{1}{2}$	$4p^2 \text{ } ^1P^o-5s \text{ } ^1P$ (2)
1633.6	A	10	0.45	8.01	$0\frac{1}{2}-1\frac{1}{2}$		1531.9	A	7	0.45	8.51	$0\frac{1}{2}-0\frac{1}{2}$	
1540.8	A	6	0.00	8.01	$1\frac{1}{2}-1\frac{1}{2}$		1449.9	A	3	0.00	8.51	$1\frac{1}{2}-0\frac{1}{2}$	
1582.4	A	8	0.45	8.26	$0\frac{1}{2}-0\frac{1}{2}$		1575.0	A	9	0.45	8.29	$0\frac{1}{2}-1\frac{1}{2}$	
1495.3	P		0.00	8.26	$1\frac{1}{2}-0\frac{1}{2}$								
							*1317.8§§	A	6?	0.00	9.37	$1\frac{1}{2}-0\frac{1}{2}$	$4p^2 \text{ } ^1P^o-5s'' \text{ } ^3S$ (3)
							1384.6	A	8	0.45	9.37	$0\frac{1}{2}-0\frac{1}{2}$	

Br. I

I P 21.49 Anal C Lift C January 1951

REFERENCES

- A C. C. Kiess, unpublished material (1940). W L, I
 B R. Ramanadhan and K. R. Rao, Indian J. Phys. 18, 319 (1944). W L, (I), T

Br II

Br II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
1064. 76	B	(9)	0. 00	11. 60	2-2	$4p^4 \ ^1P-5s \ ^4S^{\circ}$	2709. 576	A	12	11. 60	16. 15	2-1	$5s \ ^4S^{\circ}-5p' \ ^1P$
1101. 47	B	(1)	0. 39	11. 60	1-2	(1)							(8)
1015. 541	B	(20)	0. 00	12. 16	2-1	$4p^4 \ ^1P-5s \ ^4S^{\circ}$							
1049. 00	B	(20)	0. 39	12. 16	1-1	(2)	2921. 874	A	18	11. 91	16. 13	2-3	$4p^4 \ ^3P^{\circ}-5p' \ ^3D$
1056. 77	B	(5)	0. 47	12. 16	0-1		3208. 331	A	12	12. 20	16. 04	1-2	(9)
							2981. 812	A	25	11. 91	16. 04	2-2	
905. 99	B	(10)	0. 00	13. 63	2-3	$4p^4 \ ^3P-5s' \ ^3D^{\circ}$	3346. 992	A	18	12. 20	15. 89	1-1	
911. 72	B	(5)	0. 00	13. 54	2-2	(3)							
940. 79	B	(3)	0. 39	13. 51	1-1		2867. 002	A	30	11. 91	16. 21	2-3	$4p^4 \ ^3P^{\circ}-5p' \ ^3F$
							3143. 490	A	5	12. 20	16. 12	1-2	(10)
889. 23	B	(20)	0. 00	13. 88	2-3	$4p^4 \ ^3P-4d \ ^3D^{\circ}$	2925. 655	A	12	11. 91	16. 12	2-2	
922. 56	B	(6)	0. 39	13. 77	1-2	(4)							
921. 16	B	(5)	0. 47	13. 88	0-1		2713. 708	A	50	14. 91	16. 45	2-2	$4p^4 \ ^3P^{\circ}-5p' \ ^3P$
896. 64	B	(10)	0. 00	13. 77	2-2		2873. 216	A	10	12. 20	16. 49	1-1	(11)
915. 26	B	(4)	0. 39	13. 88	1-1		2690. 150	A	12	11. 91	16. 49	2-1	
							2875. 372	A	22	12. 20	16. 49	1-0	
856. 19	B	(7)	0. 00	14. 42	2-1	$4p^4 \ ^3P-5s'' \ ^1P^{\circ}$	2900. 072	A	2d?	12. 20	16. 45	1-2	
885. 48	B	(2)	0. 47	14. 42	0-1	(5)							
984. 93	B	(10)	1. 41	13. 94	2-2	$4p^4 \ ^1D-5s' \ ^1D^{\circ}$	2872. 538	A	35	12. 16	16. 45	1-2	$5s \ ^3S^{\circ}-5p' \ ^3P$
						(6)	2846. 127	A	22	12. 16	16. 49	1-1	(12)
							2848. 312	A	9	12. 16	16. 49	1-0	
948. 97	B	(20)	1. 41	14. 42	2-1	$4p^4 \ ^1D-5s'' \ ^1P^{\circ}$							
						(7)							

KRYPTON, $Z=36$

Kr I

I P 13.939 Anal A List D February 1951

REFERENCES

- A J. C. Boyce, *Phys. Rev.* **47**, 718 (1935). W L, I, I P
 W. F. Meggers, T. L. de Bruin and C. J. Humphreys, *Bur. Std. J. Research* **7**, 643, RP364 (1931). I P, T
 W. F. Meggers and C. J. Humphreys, *Bur. Std. J. Research* **10**, 447, RP 540 (1933). T
 See C. E. Moore, *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. II, p. 159 (1952). T

Kr I

Kr I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1235.819†	A	13	0.00	9.99	0-1	$4p^4\ ^1S - 5s\ [1\frac{1}{2}]^{\circ}$ (1)	Vac 1001.048	A	2	0.00	12.33	0-1	$4p^4\ ^1S - 6s\ [1\frac{1}{2}]^{\circ}$ (6)
1164.868	A	4	0.00	10.60	0-1	$4p^4\ ^1S - 5s'\ [0\frac{1}{2}]^{\circ}$ (2)	951.06	A	0	0.00	12.98	0-1	$4p^4\ ^1S - 6s'\ [0\frac{1}{2}]^{\circ}$ (7)
1030.020	A	2	0.00	11.99	0-1	$4p^4\ ^1S - 4d\ [0\frac{1}{2}]^{\circ}$ (3)	963.34	A	1	0.00	12.81	0-1	$4p^4\ ^1S - 5d\ [0\frac{1}{2}]^{\circ}$ (8)
1003.542	A	2	0.00	12.30	0-1	$4p^4\ ^3S - 4d\ [1\frac{1}{2}]^{\circ}$ (4)	946.52	A	1d	0.00	13.04	0-1	$4p^4\ ^1S - 5d\ [1\frac{1}{2}]^{\circ}$ (9)
953.42	A	1	0.00	12.95	0-1	$4p^4\ ^1S - 4d'\ [1\frac{1}{2}]^{\circ}$ (5)	945.45	A	1d	0.00	13.06	0-1	$4p^4\ ^1S - 7s\ [1\frac{1}{2}]^{\circ}$ (10)

Kr II

I P 24.47 Anal A List D January 1951

REFERENCES

- A J. C. Boyce, Phys. Rev. **47**, 718 (1935). W L, I
 B T. L. de Bruin, C. J. Humphreys, and W. F. Meggers, Bur. Std. J. Research **11**, 409, RP599 (1933).
 W L, (I), T, I P

Kr II

Kr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
917.434†	A	20	0.00	13.46	1½-0½	4p ^s 3P°-4p ^s 3S	782.084	A	25	0.00	15.78	1½-2½	4p ^s 3P°-5s' 3D
964.962	A	30	0.66	13.46	0½-0½	(1)	818.147	A	25	0.66	15.75	0½-1½	(6)
							*783.715	A	20	0.00	15.75	1½-1½	
886.302	A	30	0.00	13.93	1½-2½	4p ^s 3P°-5s 3P							
911.384	A	25	0.66	14.21	0½-1½	(2)	761.050	A	18	0.00	16.22	1½-2½	4p ^s 3P°-4d 3P
868.869	A	25	0.00	14.21	1½-1½		796.678	A	6	0.66	16.16	0½-1½	(7)
890.982	A	20	0.66	14.52	0½-0½		763.976	A	11	0.00	16.16	1½-1½	
850.318	A	6	0.00	14.52	1½-0½		799.083	A	9	0.66	16.11	0½-0½	
							766.202	A	9	0.00	16.11	1½-0½	
844.058	A	25	0.00	14.63	1½-1½	4p ^s 3P°-5s 3P							
*864.812	A	20	0.66	14.94	0½-0½	(3)	743.122	A	9	0.00	16.61	1½-2½	4p ^s 3P°-4d 3D
*826.432	A	22	0.60	14.94	1½-0½		*783.715	A	20	0.66	16.41	0½-1½	(8)
884.144	A	30	0.66	14.63	0½-1½		752.051	A	30	0.00	16.41	1½-1½	
830.377	A	18	0.00	14.87	1½-2½	4p ^s 3P°-4d 3D							
*864.812	A	20	0.66	14.94	0½-1½	(4)							
*826.432	A	22	0.00	14.94	1½-1½		Air						
859.040	A	20	0.66	15.03	0½-0½		2464.77	B	(100 h)	15.79	20.80	3½-3½	4d 3F -2°
821.161	A	20	0.00	15.03	1½-0½								(9)
771.024	A	18	0.00	16.01	1½-2½	4p ^s 3P°-4d 3F	2833.00	B	(100)	16.42	20.77	2½-3½	1-5f 3F°
						(5)							(10)

STRONTIUM, $Z=38$

Sr I

I P 5.670 Anal A List A April 1951

REFERENCES

- A F. J. Sullivan, Univ. Pittsburgh Bull. **35**, No. 1, 1 (1938). W L, I, T
 B H. N. Russell and F. A. Saunders, Astroph. J. **61**, 38 (1925). W L, (I), T
 C F. A. Saunders, Astroph. J. **56**, 73 (1922). W L, T
 A. S. King, Mt. Wilson Contr. No. 150; Astroph. J. **48**, 22 (1918). I
 A. Fowler, *Report on Series in Line Spectra*, p. 128 (Fleetway Press, London, 1922). (I)
 H. Kayser, *Handbuch der Spectroscopie* **6**, 544 (S. Hirzel, Leipzig, 1912). (I)

Sr I

Sr I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2931.830	A	30	0.00	4.21	0-1	$5s^2 \text{ } ^1\text{S} - 6p \text{ } ^1\text{P}^\circ$ (1)	Air 2307.39	C	(1u)	0.00	5.35	0-1	$5s^2 \text{ } ^1\text{S} - 10p \text{ } ^1\text{P}^\circ$ (7)
2756.75	B	(1)	0.00	4.48	0-1	$5s^2 \text{ } ^1\text{S} - 5p' \text{ } ^1\text{D}^\circ$ (2)	2275.29	C	(1u)	0.00	5.42	0-1	$5s^2 \text{ } ^1\text{S} - 11p \text{ } ^1\text{P}^\circ$ (8)
2680.10	B	(1)	0.00	4.61	0-1?	$5s^2 \text{ } ^1\text{S} - 5p' \text{ } ^1\text{P}^\circ$ (3)	2253.32	C	(1u)	0.00	5.48	0-1	$5s^2 \text{ } ^1\text{S} - 12p \text{ } ^1\text{P}^\circ$ (9)
2569.469	A	20	0.00	4.80	0-1	$5s^2 \text{ } ^1\text{S} - 7p \text{ } ^1\text{P}^\circ$ (4)	2237.65	C	(1u)	0.00	5.52	0-1	$5s^2 \text{ } ^1\text{S} - 13p \text{ } ^1\text{P}^\circ$ (10)
2428.095	A	(2)	0.00	5.08	0-1	$5s^2 \text{ } ^1\text{S} - 8p \text{ } ^1\text{P}^\circ$ (5)	2226.38	C	(1u)	0.00	5.54	0-1	$5s^2 \text{ } ^1\text{S} - 14p \text{ } ^1\text{P}^\circ$ (11)
2354.319	A	(1)	0.00	5.24	0-1	$5s^2 \text{ } ^1\text{S} - 9p \text{ } ^1\text{P}^\circ$ (6)							

Sr II

I P 10.983 Anal A List A March 1951

REFERENCES

- A F. A. Saunders, E. G. Schneider, and E. Buckingham, *Zeit. Phys.* **20**, 291 (1934). W L, T, I P
 B F. J. Sullivan, *Univ. Pittsburgh Bull.* **35**, No. 1, 1 (1938). W L, T
 A. Fowler, *Report on Series in Line Spectra*, p. 132 (Fleetway Press, London, 1922). (I)
 See H. Kayser, *Handbuch der Spectroscopie* **8**, 544 (S. Hirzel, Leipzig, 1912). I
 T. Lyman, *Astroph. J.* **35**, 352 (1912). (I)

Sr II

Sr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1783.97 1793.10	A A	----- -----	0.00 0.00	6.92 6.88	$0\frac{1}{2}-1\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5s\ ^2S-6p\ ^2P^o$ (1)	Air 2471.597 2423.569	B B	2 1	3.03 2.93	8.02 8.02	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P^o-7s\ ^2S$ (8)
Air 2425.17 2425.62	A A	----- -----	1.83 1.80	6.92 6.88	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-0\frac{1}{2}$	$4d\ ^2D-6p\ ^2P^o$ (2)	2322.355 2281.999 2324.52	B B A	2 2 1	3.03 2.93 3.03	8.34 8.34 8.34	$1\frac{1}{2}-2\frac{1}{2}$ $0\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$5p\ ^2P^o-6d\ ^2D$ (9)
2165.93 2152.84	A A	3R 2	1.83 1.80	7.53 7.53	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$4d\ ^2D-4f\ ^2F^o$ (3)	2051.88 2018.66	A A	1u 0u	3.03 2.93	9.04 9.04	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P^o-8s\ ^2S$ (10)
Vac 1778.39 1769.63	A A	(9) (8)	1.83 1.80	8.77 8.77	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$4d\ ^2D-5f\ ^2F^o$ (4)	Vac 1995.00 1964.43 1995.78	A A A	0u 0u -----	3.03 2.93 3.03	9.21 9.21 9.21	$1\frac{1}{2}-2\frac{1}{2}$ $0\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$5p\ ^2P^o-7d\ ^2D$ (11)
1620.35 1612.98	A A	(5) (4)	1.83 1.80	9.45 9.45	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$4d\ ^2D-6f\ ^2F^o$ (5)	1874.90 1846.76	A A	----- -----	3.03 2.93	9.61 9.61	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p\ ^2P^o-9s\ ^2S$ (12)
1537.91 1531.28	A A	(1) (1)	1.83 1.80	9.86 9.86	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$4d\ ^2D-7f\ ^2F^o$ (6)	1845.45 1819.01	A A	----- -----	3.03 2.93	9.72 9.71	$1\frac{1}{2}-2\frac{1}{2}$ $0\frac{1}{2}-1\frac{1}{2}$	$5p\ ^2P^o-8d\ ^2D$ (13)
1488.99 1482.69	A A	----- -----	1.83 1.80	10.12 10.12	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$4d\ ^2D-8f\ ^2F^o$ (7)	1762.81	A	-----	3.03	10.03	$1\frac{1}{2}-1\frac{1}{2}$	$5p\ ^2P^o-9d\ ^2D$ (14)

YTTRIUM, Z=39

Y I

I P 6.5 Anal A List A May 1951

REFERENCES

- A W. F. Meggers—See W. F. Meggers and H. N. Russell, Bur. Std. J. Research **2**, 745, RP55 (1929). W L, (I), T, I P
 B J. M. Eder—See Ref. A. W L, (I)
 A. S. King and E. Carter, Mt. Wilson Contr. No. 326; Astroph. J. **65**, 86 (1927). I

Y I

Y I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2964.96	A	30	0.07	4.23	2½–2½	a³D – x ³D°	2634.32	B	(1)	0.07	4.75	2½–3½	a³D – y ³G°
2948.39	A	30	0.00	4.19	1½–1½	(1)							(8)
2995.26	A	10	0.07	4.19	2½–1½		2490.4	A	(1)	0.07	5.02	2½–2½	a³D – v ³D°
2909.05	A	20	0.00	4.23	1½–2½		2460.11	B	(1)	0.00	5.02	1½–1½	(9)
							2457.93	B	(½)	0.00	5.02	1½–2½	
2813.64	B	8	0.07	4.45	2½–2½	a³D – x ¹D°†							
2807.66	B	1	0.07	4.46	2½–1½	(2)	2354.20	B	(3)	0.07	5.31	2½–3½	a³D – v ³F°
2791.20	B	(1)	0.00	4.42	1½–0½		2332.58	B	(2)	0.00	5.29	1½–2½	(10)
							2361.81	B	(2)	0.07	5.29	2½–2½	
2742.55	B	(3)	0.00	4.50	1½–1½	a³D – w ³D°							
*2730.06	B	(1)	0.00	4.52	1½–2½	(3)							
2760.10	B	(3)	0.07	4.54	2½–1½	a³D – z ¹S°	2929.00	A	(1)	1.30	5.51	0½–0½	z³P° – h ¹D
						(4)							(11)
2705.85	B	(1)	0.07	4.63	2½–2½	a³D – y ¹P°	2901.48	B	6	1.30	5.55	0½–	z³P° – 2
*2730.06	B	(1)	0.07	4.59	2½–1½	(5)							(12)
2723.00	B	(3)	0.07	4.60	2½–1½	a³D – w ³P°	2886.49	B	15	1.40	5.68	1½–1½	z³P° – f ³P
2681.65	B	(1)	0.00	4.60	1½–0½	(6)	2822.56	B	10	1.30	5.67	0½–0½	(13)
2684.20	B	(½)	0.00	4.60	1½–1½		2890.40	B	3	1.40	5.67	1½–0½	
							2818.87	B	3	1.30	5.68	0½–1½	
2695.40	B	(1)	0.07	4.64	2½–3½	a³D – w ³F°							
2672.08	B	(1)	0.00	4.62	1½–2½	(7)							

Y II

I P 12.3 Anal A List A May 1951

REFERENCES

- A W. F. Meggers and H. N. Russell, Bur. Std. J. Research **2**, 737 RP55 (1929). W L, I, T, I P
 B J. R. McNally, Jr. and G. R. Harrison, J. Opt. Soc. Am. **35**, 584 (1945). W L, T

Y II

Y II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2243.06	A	50	0.00	5.50	0-1	$a^1S - y^1P^o$ (1)	Air 2750.40	A	3h	3.23	7.72	2-2	$z^1D^o - g^1D$ (13)
2422.22	A	50	0.41	5.50	2-1	$a^1D - y^1P^o$ (2)	2564.3	A	1	3.23	8.04	2-1	$z^1D^o - g^1D$ (14)
2974.03	A	5h	3.04	7.19	2-1	$z^1P^o - e^1S$ (3)	2268.14	A	2h	3.23	8.67	2-2	$z^1D^o - h^1D$ (15)
2898.93	A	3	2.94	7.19	1-1		2980.69	B	20hl	3.51	7.65	4-4	$z^1F^o - e^1F$ (16)
2871.4	A	1h	2.89	7.19	0-1		2930.15	A	6h	3.40	7.61	3-3	
2950.33	A	1h	3.04	7.23	2-3	$z^1P^o - e^1F$ (4)	2930.773	B	2h	3.36	7.57	2-2	
2482.5	A	1	2.94	7.28	1-2	$z^1P^o - f^1D$ (5)	3006.0	A	2hl	3.51	7.61	4-3	
2854.45	A	15	3.04	7.37	2-2	$z^1P^o - e^1P$ (6)	2957.39	A	2h	3.40	7.57	3-2	
2826.38	A	5	2.94	7.30	1-1		2834.57	A	5h	3.36	7.72	2-2	$z^1F^o - g^1D$ (17)
2897.70	A	5	3.04	7.30	2-1		2956.04	A	5h	3.40	7.57	1-2	$z^1P^o - e^1F$ (18)
2856.32	A	6	2.94	7.26	1-0		2953.28	A	3h	3.40	7.58	1-0	$z^1P^o - f^1S$ (19)
2785.23	A	3	2.94	7.37	1-2		2858.06	A	4h	3.40	7.72	1-2	$z^1P^o - g^1D$ (20)
2800.11	A	4	2.89	7.30	0-1		2340.8	A	10h	3.40	8.67	1-2	$z^1P^o - h^1D$ (21)
2785.60	A	2	3.04	7.47	2-2	$z^1P^o - f^1D$ (7)	2948.98	A	3h	3.53	7.72	1-2	$z^1D^o - g^1D$ (22)
2734.98	A	4h	3.04	7.56	2-1	$z^1P^o - f^1S$ (8)	2825.37	A	3h	3.61	7.97	3-2	$z^1D^o - f^1P$ (23)
2460.62	A	20	3.04	8.06	2-3	$z^1P^o - g^1D$ (9)	2813.61	A	4h	3.55	7.93	2-1	
2413.92	A	3h	2.94	8.05	1-2								
2398.14	A	10hl	2.89	8.04	0-1								
2465.90	A	5h	3.04	8.05	2-2								
2417.29	B	5h	2.94	8.04	1-1								
2982.20	A	2	3.23	7.37	2-2	$z^1D^o - e^1P$ (10)							
2907.18	A	2	3.23	7.47	2-2	$z^1D^o - f^1D$ (11)							
2840.98	A	5h	3.23	7.57	2-2	$z^1D^o - e^1F$ (12)							

Y III

I P 20.4 Anal C List A March 1951

REFERENCES

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 B I. S. Bowen and R. A. Millikan, Phys. Rev. **28**, 923 (1926). W L, (I), T, I P

Y III

Y III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2367.25	A	200	0.09	5.30	$2\frac{1}{2} - 1\frac{1}{2}$	$4d^1D - 5p^1P^o$ (1)	Air 2817.03	A	200	0.92	5.30	$0\frac{1}{2} - 1\frac{1}{2}$	$5s^1S - 5p^1P^o$ (3)
2414.68	A	100	0.00	5.11	$1\frac{1}{2} - 0\frac{1}{2}$		2945.92	A	150	0.92	5.11	$0\frac{1}{2} - 0\frac{1}{2}$	
2327.30	A	20	0.00	5.30	$1\frac{1}{2} - 1\frac{1}{2}$								
Vac 996.37	B	(2)	0.09	12.48	$2\frac{1}{2} -$	$4d^1D - 4f^1F^o$ (2)	2284.5	A	100	5.30	10.70	$1\frac{1}{2} - 0\frac{1}{2}$	$5p^1P^o - 6s^1S$ (4)
989.21	B	(1)	0.00	12.48	$1\frac{1}{2} - 2\frac{1}{2}$		2206.22	A	30	5.11	10.70	$0\frac{1}{2} - 0\frac{1}{2}$	
							2191.22	A	200	5.30	10.93	$1\frac{1}{2} - 2\frac{1}{2}$	$5p^1P^o - 5d^1D$ (5)
							2127.99	A	100	5.11	10.91	$0\frac{1}{2} - 1\frac{1}{2}$	
							2200.80	A	50	5.30	10.91	$1\frac{1}{2} - 1\frac{1}{2}$	

ZIRCONIUM, Z=40

Zr I

I P 6. 92 Anal A List B May 1951

REFERENCES

- A C. C. Kiess and H. K. Kiess, Bur. Std. J. Research **6**, 621, RP296 (1931). W L, (I) T, I P
 A. S. King and E. Carter, Mt. Wilson Contr. No. 326; Astroph. J. **65**, 92 (1927). I

Zr I

Zr I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
3029.52	A	300	0.15	4.23	4-3	$a^3F-u^3D^{\circ}$	2725.45	A	(8)	0.15	4.68	4-4	$a^3F-s^3F^{\circ}$
3011.73	A	250	0.07	4.17	3-2	(1)	2709.33	A	(8)	0.07	4.63	3-3	(10)
2985.36	A	200	0.00	4.13	2-1		2692.91	A	(4)	0.00	4.58	2-2	
2969.18	A	40	0.07	4.23	3-3		2759.46	A	(3)	0.15	4.63	4-3	
2960.86	A	60	0.00	4.17	2-2		2676.54	A	(4)	0.07	4.68	3-4	
2923.86	A	10	0.07	4.29	3-2	$a^3F-y^3P^{\circ}$	2687.74	A	(7)	0.15	4.74	4-3	$a^3F-s^3D^{\circ}$
						(2)	2647.77	A	(4)	0.07	4.73	3-2	(11)
2916.23	A	10	0.07	4.30	3-2	$a^3F-w^1D^{\circ}$	*2612.18	A	(4)	0.00	4.72	2-1	
2868.48	A	(3)	0.00	4.30	2-2	(3)	2640.13	A	(4)	0.07	4.74	3-3	
							2608.37	A	(3)	0.00	4.73	2-2	
2875.98	A	200	0.15	4.44	4-4	$a^3F-t^3F^{\circ}$	2635.40	A	(8)	0.15	4.84	4-4	$a^3F-r^3F^{\circ}$
2837.23	A	200	0.07	4.42	3-3	(4)	2609.40	A	(6)	0.07	4.80	3-3	(12)
2814.91	A	150	0.00	4.38	2-2		2592.18	A	(3)	0.00	4.76	2-2	
2892.26	A	30	0.15	4.42	4-3		2655.84	A	(3)	0.15	4.80	4-3	
2860.85	A	30	0.07	4.38	3-2		2589.62	A	(5)	0.07	4.84	3-4	
2821.56	A	8	0.07	4.44	3-4								
2792.05	A	20	0.00	4.42	2-3		2567.44	A	(7)	0.15	4.96	4-5	$a^3F-u^3G^{\circ}$
							2539.62	A	(10)	0.07	4.93	3-4	(13)
2857.97	A	2	0.15	4.47	4-3	$a^3F-t^3D^{\circ}$	2538.00	A	(6)	0.00	4.86	2-3	
2798.30	A	(6)	0.07	4.48	3-2	(5)	2583.64	A	(6)	0.15	4.93	4-4	
2767.38	A	(4)	0.00	4.46	2-1								
2848.50	A	150	0.15	4.49	4-4	$a^3F-x^3G^{\circ}$	2556.38	A	(6)	0.15	4.98	4-3	$a^3F-r^3D^{\circ}$
2795.14	A	8	0.07	4.49	3-4	(6)	2550.50	A	(4)	0.07	4.91	3-2	(14)
*2827.55§	A	8	0.15	4.52	4-5	$a^3F-x^3H^{\circ}$	2403.44	A	(5)	0.15	5.29	4-5	$a^3F-t^3G^{\circ}$
2774.03	A	(2)	0.07	4.52	3-4	(7)	2397.23	A	(7)	0.07	5.22	3-4	(15)
							2374.43	A	(10)	0.00	5.20	2-3	
2719.52	A	(4)	0.00	4.54	2-3	$a^3F-w^3F^{\circ}$	2407.03	A	(1)	0.07	5.20	3-3	
						(8)							
2763.01	A	(6)	0.15	4.62	4-5	$a^3F-v^3G^{\circ}$	2405.52	A	(10)	0.15	5.28	4-3	$a^3F-q^3D^{\circ}$
2727.00	A	(5)	0.07	4.60	3-4	(9)	2388.00	A	(8)	0.07	5.24	3-2	(16)
2706.15	A	(10)	0.00	4.56	2-3		2363.52	A	(10)	0.00	5.22	2-1	
							2367.33	A	(8)	0.07	5.28	3-3	
							2355.90	A	(7)	0.00	5.24	2-2	

Zr I—Continued

Zr I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2378.25	A	(4)	0.15	5.34	4-4	$\alpha^1F-g^1F^o$	2448.37	A	(4)	0.52	5.56	2-2	$\alpha^1P-s^1P^o$
2341.32	A	(3)	0.07	5.34	3-3	(17)	2468.03	A	(5)	0.54	5.54	1-1	(24)
*2340.87	A	(5)	0.00	5.27	2-2		2458.50	A	(2)	0.52	5.54	2-1	
2378.68	A	(1)	0.15	5.34	4-3		2459.84	A	(3)	0.54	5.56	1-2	
2372.57	A	(5)	0.07	5.27	3-2								
*2340.87	A	(5)	0.07	5.34	3-4								
2310.44	A	(2)	0.00	5.34	2-3								
							2836.49	A	4	0.63	4.98	2-3	$\alpha^1D-r^1D^o$
2248.05	A	(4)	0.15	5.64	4-3	$\alpha^1F-p^1D^o$							(25)
2220.68	A	(5)	0.07	5.63	3-2	(18)							
2201.69	A	(3)	0.00	5.61	2-1		2880.83	A	5	0.63	4.91	2-3	$\alpha^1D-v^1F^o$
2214.63	A	(4)	0.07	5.64	3-3								(26)
2192.89	A	(3)	0.00	5.63	2-2								
							2725.01	A	(2)	0.63	5.16	2-2	$\alpha^1D-t^1P^o$
2105.83	A	(5)	0.15	6.01	4-3	$\alpha^1F-o^1L^o$	2786.90	A	(6)	0.63	5.06	2-1	(27)
2101.80	A	(5)	0.07	5.94	3-2	(19)							
2092.88	A	(4)	0.00	5.90	2-1		2819.56	A	10	0.63	5.01	2-2	$\alpha^1D-v^1D^o$
													(28)
							2790.14	A	(12)	0.63	5.05	2-1	$\alpha^1D-w^1P^o$
2814.71	A	(2)	0.52	4.90	2-1	$\alpha^1P-x^1P^o$							(29)
2829.80	A	8	0.54	4.90	1-1	(20)							
2815.49	A	2	0.52	4.90	0-1		2701.83	A	(3)	0.63	5.20	2-3	$\alpha^1D-t^1G^o$
													(30)
2806.77	A	12	0.52	4.91	2-3	$\alpha^1P-v^1F^o$	2136.16	A	(7)	0.63	6.41	2-1	$\alpha^1D-v^1P^o$
						(21)							(31)
2658.66	A	(6)	0.52	5.16	2-2	$\alpha^1P-t^1P^o$							
2717.48	A	(5)	0.52	5.06	2-1	(22)							
*2764.68	A	(2)	0.54	5.00	1-0								
2672.17	A	(1)	0.54	5.16	1-2		*2612.18	A	(4)	0.99	5.72	4-3	$\alpha^1G-u^1F^o$
2718.28	A	(4)	0.52	5.06	0-1								(32)
2563.56	A	(4)	0.52	5.33	2-1	$\alpha^1P-w^1S^o$							
2576.08	A	(5)	0.54	5.33	1-1	(23)							
2564.26	A	(3)	0.52	5.33	0-1								

Strongest Unclassified Lines of Zr I

Air						Air							
2793.40	A	8				2285.25	A	(6)					
2737.86	A	(5)				2269.43	A	(5)					
2630.33	A	(6)				2230.88	A	(5)					
2620.83	A	(5)				2214.20	A	(5)					
2579.54	A	(8)				2178.97	A	(5)					
2554.30	A	(5)				2157.78	A	(5)					
2495.26	A	(5)				2149.15	A	(6)					
2441.30	A	(8)				2119.14	A	(6)					
2400.81	A	(5)				2110.53	A	(7)					
2389.21	A	(8)				2108.56	A	(6)					
2384.16	A	(12)				2103.31	A	(5)					
2380.55	A	(9)				2089.57	A	(5)					

Zr II

I P 13.97 Anal A List B April 1951

REFERENCES

- A C. C. Kiess and H. K. Kiess, Bur. Std. J. Research **5**, 1205, RP255 (1930). I P, W L, I, T
 B R. J. Lang, See Ref. A

Zr II

Zr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2952.23	A	6	0.16	4.34	4½-4½	a 'F-z 'G°	2937.74	A	4	0.46	4.66	4½-3½	b 'F-y 'F°
2964.55	A	4	0.09	4.26	3½-3½	(1)	2936.31	A	12	0.41	4.61	3½-2½	(11)
2904.22	A	1	0.09	4.34	3½-4½		2898.72	A	7	0.41	4.66	3½-3½	
2925.62	A	4	0.04	4.26	2½-3½		2901.81	A	3	0.36	4.61	2½-2½	
							2865.09	A	3	0.36	4.66	2½-3½	
2808.15	A	3	0.04	4.43	2½-1½	a 'F-z 'P°							
2761.89	A	6	0.00	4.47	1½-0½	(2)	2740.33	A	6	0.46	4.97	4½-3½	b 'F-x 'D°
2783.56	A	5	0.00	4.43	1½-1½		2750.95	A	4	0.41	4.89	3½-2½	(12)
							2754.23	A	2	0.36	4.84	2½-1½	
2722.62	A	25	0.16	4.70	4½-3½	a 'F-y 'D°	2706.38	A	4	0.41	4.97	3½-3½	
2745.86	A	20	0.09	4.59	3½-2½	(3)	2729.93	A	3	0.32	4.84	1½-1½	
2752.21	A	20	0.04	4.52	2½-1½								
2758.80	A	20	0.00	4.47	1½-0½		2604.99	A	2	0.41	5.15	3½-2½	b 'F-x 'D°
2681.75	A	5	0.09	4.70	3½-3½								(13)
2712.38	A	10	0.04	4.59	2½-2½		2501.38	A	1b	0.36	5.29	2½-2½	b 'F-x 'F°
2728.56	A	2	0.00	4.52	1½-1½		2481.35	A	5	0.32	5.29	1½-2½	(14)
*2689.47	A	6	0.00	4.59	1½-2½								
							2480.16	A	2	0.36	5.33	2½-2½	b 'F-y 'P°
2678.59	A	25	0.16	4.77	4½-4½	a 'F-y 'F°							(15)
2726.48	A	15	0.09	4.62	3½-3½	(4)							
2734.84	A	20	0.04	4.55	2½-2½		2363.84	A	4	0.36	5.58	2½-2½	b 'F-w 'D°
2742.54	A	20	0.00	4.50	1½-1½		2353.21	A	6	0.32	5.56	1½-1½	(16)
2768.73	A	15	0.16	4.62	4½-3½		2345.93	A	1	0.32	5.58	1½-2½	
2768.84	A	15	0.09	4.55	3½-2½								
2766.41	A	1	0.04	4.50	2½-1½		2206.31	A	4b	0.32	5.91	1½-2½	b 'F-w 'F°
2639.07	A	12	0.09	4.77	3½-4½								(17)
2693.52	A	9	0.04	4.62	2½-3½								
2711.48	A	12	0.00	4.55	1½-2½								
2741.54	A	8	0.16	4.66	4½-3½	a 'F-y 'F°							
2732.72	A	15	0.09	4.61	3½-2½	(5)	2797.78	A	3b	0.56	4.97	2½-3½?	a 'D-x 'D°
2700.12	A	18	0.09	4.66	3½-3½		2824.56	A	2b	0.52	4.89	1½-2½?	(18)
2699.59	A	6	0.04	4.61	2½-2½								
2667.77	A	12	0.04	4.66	2½-3½		*2882.08	A	5	0.56	4.84	2½-1½	
										0.52	4.81	1½-0½	
2650.37	A	12	0.09	4.75	3½-2½	a 'F-z 'P°	2714.22	A	10	0.56	5.10	2½-1½	a 'D-y 'P°
2643.40	A	6	0.04	4.71	2½-1½	(6)	2740.49	A	8	0.52	5.03	1½-0½	(19)
2626.41	A	4	0.00	4.70	1½-0½		2695.42	A	8	0.52	5.10	1½-1½	
2619.20	A	3	0.04	4.75	2½-2½								
2621.60	A	3	0.00	4.71	1½-1½		*2689.47	A	6	0.56	5.15	2½-2½	a 'D-x 'D°
							2704.66	A	4	0.56	5.12	2½-1½	(20)
2568.85	A	40	0.16	4.97	4½-3½	a 'F-x 'D°	2670.94	A	10	0.52	5.15	1½-2½	
*2571.42	A	50	0.09	4.89	3½-2½	(7)							
			0.04	4.84	2½-1½		2630.91	A	15	0.56	5.25	2½-3½	a 'D-x 'F°
2567.62	A	20	0.00	4.81	1½-0½		2589.02	A	15	0.52	5.29	1½-2½	(21)
2532.47	A	20	0.09	4.97	3½-3½								
2542.09	A	18	0.04	4.89	2½-2½		2583.38	A	15	0.56	5.33	2½-2½	a 'D-y 'P°
2550.71	A	18	0.00	4.84	1½-1½		2586.85	A	4	0.52	5.30	1½-1½	(22)
2503.98	A	4	0.04	4.97	2½-3½		2604.19	A	3	0.56	5.30	2½-1½	
2521.90	A	5	0.00	4.89	1½-2½								
							2457.43	A	20	0.56	5.58	2½-2½	a 'D-w 'D°
2436.94	A	1	0.04	5.10	2½-1½	a 'F-y 'P°	2449.83	A	20	0.52	5.56	1½-1½	(23)
2454.61	A	4	0.00	5.03	1½-0½	(8)	2465.37	A	8	0.56	5.56	2½-1½	
							2441.97	A	12	0.52	5.58	1½-2½	
2915.98	A	15	0.46	4.70	4½-3½	b 'F-y 'D°	2434.55	A	8	0.56	5.63	2½-1½	a 'D-x 'P°
2951.46	A	10	0.41	4.59	3½-2½	(9)	2397.57	A	5	0.52	5.67	1½-0½	(24)
2962.69	A	12	0.36	4.52	2½-1½		2419.37	A	10	0.52	5.63	1½-1½	
2969.63	A	8	0.32	4.47	1½-0½								
2877.56	A	10	0.41	4.70	3½-3½		2280.36	A	5	0.56	5.97	2½-3½	a 'D-w 'F°
2916.63	A	7	0.36	4.59	2½-2½		*2291.15	A	15	0.52	5.91	1½-2½	(25)
2934.62	A	12	0.32	4.52	1½-1½								
2889.41	A	5	0.32	4.59	1½-2½		2068.09	A	3	0.52	6.49	1½-0½	a 'D-w 'P°
													(26)
2865.61	A	5	0.46	4.77	4½-4½	b 'F-y 'F°							
2929.10	A	1	0.41	4.62	3½-3½	(10)							
2968.95	A	12	0.46	4.62	4½-3½		Vac						
2978.07	A	12	0.41	4.55	3½-2½		1920.76	B	5	0.56	6.98	2½-2½	a 'D-v 'D°
2979.18	A	12	0.36	4.50	2½-1½		1938.27	A	3	0.52	6.89	1½-1½	(27)
2894.78	A	1	0.36	4.62	2½-3½		1948.10	A	1	0.56	6.89	2½-1½	
							1911.32	B	4	0.52	6.98	1½-2½	

Zr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1878.53	B	4	0.56	7.13	2½-3½	a ² D-v ² F°
1893.52	B	1	0.52	7.04	1½-2½	(28)
1902.78	B	3	0.56	7.04	2½-2½	
Air						
2838.00	A	5	0.75	5.10	1½-1½	a ² P-y ² P°
2856.05	A	5	0.71	5.03	0½-0½	(29)
2888.04	A	5	0.75	5.03	1½-0½	
*2807.13	A	3b	0.71	5.10	0½-1½	
2810.91	A	15	0.75	5.15	1½-2½	a ² P-x ² D°
2796.92	A	10	0.71	5.12	0½-1½	(30)
2827.52	A	3	0.75	5.12	1½-1½	
2720.36	A	5	0.75	5.29	1½-2½	a ² P-x ² F°
						(31)
2558.36	A	1b	0.75	5.58	1½-2½	a ² P-w ² D°
2567.05	A	7	0.75	5.56	1½-1½	(32)
2533.65	A	4	0.75	5.63	1½-1½	a ² P-x ² P°
2485.60	A	3	0.71	5.67	0½-0½	(33)
2509.77	A	3	0.75	5.67	1½-0½	
2509.01	A	2	0.71	5.63	0½-1½	
2393.35	A	2	0.75	5.91	1½-2½	a ² P-w ² F°
						(34)
2137.67	A	7	0.75	6.53	1½-1½	a ² P-w ² P°
2133.28	A	7	0.71	6.49	0½-0½	(35)
2151.02	A	6	0.75	6.49	1½-0½	
2120.12	A	5	0.71	6.53	0½-1½	
2809.40	A	2	0.71	5.10	2½-1½	a ² F-y ² P°
						(36)
2905.22	A	15	0.80	5.05	3½-4½	a ² F-y ² G°
2848.17	A	8	0.71	5.04	2½-3½	(37)
2907.37	A	6	0.80	5.04	3½-3½	
2839.34	A	10	0.80	5.15	3½-2½	a ² F-x ² D°
2799.16	A	8	0.71	5.12	2½-1½	(38)
2782.84	A	2	0.71	5.15	2½-2½	
2834.38	A	5	0.80	5.15	3½-4½	a ² F-z ² H°
						(39)
2774.15	A	12	0.80	5.25	3½-3½	a ² F-x ² F°
2694.05	A	10	0.71	5.29	2½-2½	(40)
2721.37	A	2	0.80	5.33	3½-2½	a ² F-y ² P°
*2669.48	A	8	0.71	5.33	2½-2½	(41)
2543.66	A	1	0.71	5.56	2½-1½	a ² F-w ² D°
*2535.15	A	5	0.71	5.58	2½-2½	(42)
2387.17	A	15	0.80	5.97	3½-3½	a ² F-w ² F°
2372.92	A	12	0.71	5.91	2½-2½	(43)
2413.85	A	3	0.80	5.91	3½-2½	
2347.13	A	4	0.71	5.97	2½-3½	
Vac						
1995.88	A	7	0.80	6.98	3½-2½	a ² F-v ² D°
1996.69	A	6	0.71	6.89	2½-1½	(44)

Zr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2973.69	A	2	0.99	5.15	2½-2½	a ² P-x ² D°
2945.45	A	4	0.96	5.15	1½-2½	(45)
2944.19	A	3	0.93	5.12	0½-1½	
2902.24	A	2	0.99	5.25	2½-3½	a ² P-x ² F°
2846.16	A	2	0.96	5.29	1½-2½	(46)
2872.52	A	6	0.99	5.29	2½-2½	
2844.57	A	15	0.99	5.33	2½-2½	a ² P-y ² P°
2843.53	A	10	0.96	5.30	1½-1½	(47)
2833.90	A	8	0.93	5.28	0½-0½	
2869.80	A	12	0.99	5.30	2½-1½	
2851.98	A	12	0.96	5.28	1½-0½	
2818.76	A	20	0.96	5.33	1½-2½	
2825.54	A	15	0.93	5.30	0½-1½	
2692.60	A	6	0.99	5.58	2½-2½	a ² P-w ² D°
*2669.48	A	8	0.96	5.58	1½-2½	(48)
2665.19	A	3	0.99	5.63	2½-1½	a ² P-x ² P°
2642.51	A	2	0.96	5.63	1½-1½	(49)
2601.27	A	3	0.93	5.67	0½-0½	
2626.98	A	3	0.93	5.63	0½-1½	
2214.59	A	2	0.96	6.53	1½-1½	a ² P-w ² P°
						(50)
2918.24	A	18	1.01	5.24	4½-5½	a ² G-z ² H°
2948.94	A	12	0.97	5.15	3½-4½	(51)
2976.61	A	10	1.01	5.15	4½-4½	
2910.26	A	8	1.01	5.25	4½-3½	a ² G-x ² F°
2854.42	A	7	0.97	5.29	3½-2½	(52)
2883.79	A	3	0.97	5.25	3½-3½	
2487.28	A	20	1.01	5.97	4½-3½	a ² G-w ² F°
2496.48	A	15	0.97	5.91	3½-2½	(53)
2467.97	A	2b	0.97	5.97	3½-3½	
2015.86	A	5	1.01	7.13	4½-3½	a ² G-v ² F°
2030.73	A	6	0.97	7.04	3½-2½	(54)
2003.18	A	0	0.97	7.13	3½-3½	
2184.80	A	5b	1.48	7.13	4½-3½	a ² H-v ² F°
						(55)
2924.63	A	8	1.75	5.97	2½-3½	b ² D-w ² F°
2901.60	A	5	1.66	5.91	1½-2½	(56)
2553.06	A	2	1.66	6.49	1½-0½	b ² D-w ² P°
						(57)
*2357.45	A	25	{1.75 1.66	{6.98 6.89	2½-2½ 1½-1½	b ² D-v ² D°
2398.97	A	5	1.75	6.89	2½-1½	(58)
2317.27	A	15	1.66	6.98	1½-2½	
2294.08	A	12	1.75	7.13	2½-3½	b ² D-v ² F°
*2291.15	A	15	1.66	7.04	1½-2½	(59)
2330.38	A	18	1.75	7.04	2½-2½	
2095.80	A	15	1.75	7.64	2½-1½	b ² D-v ² P°
2109.66	A	12	1.66	7.51	1½-0½	(60)
2063.89	A	6	1.66	7.64	1½-1½	

Zr II—Continued

Zr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2926.99	A	25	1.75	5.97	4½-3½	b ²G-u ²F°	2061.85	A	6	3.80	9.79	5½-6½	z ⁴G°-e ⁴H
2955.77	A	20	1.74	5.91	3½-2½	(61)	2025.33	A	4	3.68	9.78	4½-5½	(76)
							2001.80	A	4	3.57	9.73	3½-4½	
2351.69	A	12	1.74	6.98	3½-2½	b ²G-v ²D°	Vac						
						(62)	1976.54	A	3	3.45	9.70	2½-3½	
							Air						
2295.53	A	10	1.75	7.13	4½-3½	b ²G-v ²F°	2065.35	A	3	3.80	9.78	5½-5½	
2324.77	A	15	1.74	7.04	3½-2½	(63)	2039.84	A	1	3.68	9.73	4½-4½	
2288.63	A	2	1.74	7.13	3½-3½		2012.66	A	0	3.57	9.70	3½-3½	
2389.52	A	8	1.82	6.98	2½-2½	c ²D-v ²D°	2805.71	A	2b	3.77	8.17	3½-3½	z ²F°-e ²F
2406.83	A	7	1.77	6.89	1½-1½	(64)	2748.89	A	2	3.64	8.13	2½-2½	(77)
2432.26	A	3	1.82	6.89	2½-1½								
2364.95	A	2	1.77	6.98	1½-2½		2581.71	A	2	3.77	8.55	3½-4½	z ²F°-e ²G
													(78)
2324.48	A	5	1.82	7.13	2½-3½	c ²D-v ²F°	2275.39	A	3b	3.77	9.20	3½-3½	z ²F°-f ²F
2337.76	A	1	1.77	7.04	1½-2½	(65)	2254.20	A	3b	3.64	9.12	2½-2½	(79)
2361.76	A	10	1.82	7.04	2½-2½		2221.91	A	1b	3.64	9.20	2½-3½	
2618.89	A	2	2.27	6.98	2½-2½	d ²D-v ²D°	2235.10	A	5	3.93	9.46	4½-4½	z ⁴F°-f ⁴F
2615.59	A	4	2.17	6.89	1½-1½	(66)	2233.48	A	5	3.86	9.38	3½-3½	(80)
2540.87	A	3b	2.27	7.13	2½-3½	d ²D-v ²F°	2231.86	A	2	3.77	9.30	2½-2½	
2534.16	A	2b	2.17	7.04	1½-2½	(67)	2229.74	A	1b	3.68	9.21	1½-1½	
							2199.17	A	1b	3.77	9.38	2½-3½	
2692.00	A	6	2.40	6.98	3½-2½	b ²F-v ²D°	2853.66	A	2b	3.85	8.17	2½-3½	z ²D°-e ²F
2752.57	A	2b	2.41	6.89	2½-1½	(68)	2821.09	A	1b	3.76	8.13	1½-2½	(81)
2609.74	A	5	2.40	7.13	3½-3½	b ²F-v ²F°	2306.78	A	2b	3.85	9.20	2½-3½	z ²D°-f ²F
2662.57	A	3	2.41	7.04	2½-2½	(69)	2302.52	A	2b	3.76	9.12	1½-2½	(82)
2739.77	A	1	2.48	6.98	1½-2½	b ²P-v ²D°	2931.89	A	3b	4.34	8.55	4½-4½	z ²G°-e ²G
2760.10	A	3b	2.42	6.89	0½-1½	(70)	2886.71	A	3b	4.26	8.53	3½-3½	(83)
							2946.30	A	1b	4.34	8.53	4½-3½	
2703.25	A	3	2.48	7.04	1½-2½	b ²P-v ²F°	2543.04	A	3b	4.34	9.20	4½-3½	z ²G°-f ²F
						(71)	2539.37	A	2	4.26	9.12	3½-2½	(84)
2392.66	A	10	2.48	7.64	1½-1½	b ²P-v ²P°	2067.08	A	4	4.34	10.31	4½-4½	z ²G°-g ²G
2426.38	A	7	2.42	7.51	0½-0½	(72)	2051.21	A	4	4.26	10.27	3½-3½	(85)
2454.21	A	4	2.48	7.51	1½-0½		2037.58	A	1	4.26	10.31	3½-4½	
2366.22	A	3	2.42	7.64	0½-1½								
2726.99	A	3b	3.11	7.64	0½-1½	a ²S-v ²P°	2350.91	A	3	4.66	9.91	3½-4½	y ²F°-f ²G
*2807.13	A	3b	3.11	7.51	0½-0½	(73)	2364.58	A	2	4.61	9.83	2½-3½	(86)
2931.08	A	8bl	3.80	8.01	5½-4½	z ⁴G°-e ⁴F							
2895.32	A	6bl	3.68	7.95	4½-3½	(74)	2903.70	A	15bl	5.24	9.49	5½-6½	z ²H°-e ²I
2859.61	A	4b	3.57	7.88	3½-2½		2884.57	A	7b	5.15	9.43	4½-5½	(88)
2806.68	A	5	3.45	7.85	2½-1½		2941.55	A	1	5.24	9.43	5½-5½	
2851.28	A	1b	3.68	8.01	4½-4½								
2819.31	A	31	3.57	7.95	3½-3½		2786.95	A	6bl	5.24	9.66	5½-5½	z ²H°-e ²H
2785.90	A	4b	3.45	7.88	2½-2½		2776.59	A	3b	5.15	9.60	4½-4½	(89)
2747.66	A	1b	3.45	7.95	2½-3½		2829.38	A	0	5.24	9.60	5½-4½	
2182.81	A	5b	3.80	9.46	5½-4½	z ⁴G°-f ⁴F	2026.61	A	5b	5.24	11.32	5½-5½	z ²H°-f ²H
2165.24	A	4b	3.68	9.38	4½-3½	(75)	2029.87	A	3b	5.15	11.23	4½-4½	(90)
2152.89	A	4b	3.57	9.30	3½-2½		2057.96	A	1b	5.24	11.23	5½-4½	
2144.01	A	4b	3.45	9.21	2½-1½		Vac						
2122.41	A	1	3.57	9.38	3½-3½		2000.07	A	1b	5.15	11.32	4½-5½	

Strongest Unclassified Lines of Zr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2370. 14	A	5b					2220. 22	A	4b				
2359. 08	A	5b					2159. 19	A	4				
2321. 87	A	5					2103. 17	A	5b				
2308. 10	A	6					2097. 02	A	5b				
2301. 61	A	4b					2080. 99	A	5b				
2276. 69	A	5b					2074. 03	A	6b				
2265. 02	A	4					2061. 35	A	5b				
2257. 88	A	4b											

Zr III

I P 24.7 Anal B List B December 1951

REFERENCES

- A C. C. Kiess, unpublished material (December 1951). W L, I, T, I P
 B R. J. Lang, see C. C. Kiess and R. J. Lang, Bur. Std. J. Research **5**, 309, RP202 (1930). W L, (I), T

Zr III

Zr III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1864. 06	A	40	0. 00	6. 62	2-2	$a^3F - z^1D^{\circ}$ (1)	819. 57	B	(12)	0. 18	15. 25	4-5	$a^3F - z^3G^{\circ}\dagger$
1779. 52	A	75	0. 18	7. 12	4-4	$a^3F - z^3F^{\circ}$	*820. 20	B	(12)	0. 08	15. 13	3-4	(6)
1805. 28	A	50	0. 08	6. 92	3-3	(2)				0. 00	15. 05	2-3	
1800. 04	A	50	0. 00	6. 86	2-2		765. 11	B	(30)	0. 18	16. 32	4-3	$a^3F - y^1D^{\circ}$
1831. 88	A	20	0. 18	6. 92	4-3		764. 33	B	(15)	0. 08	16. 23	3-2	(7)
1754. 37	A	25	0. 08	7. 12	3-4		763. 30	B	(10)	0. 00	16. 17	2-1	
1783. 35	A	15	0. 00	6. 92	2-3								
1790. 21	A	75	0. 18	7. 08	4-3	$a^3F - z^3D^{\circ}$	Air						
1793. 60	A	65	0. 08	6. 97	3-2	(3)	2086. 78	A	200	0. 71	6. 62	2-2	$a^1D - z^1D^{\circ}$ (8)
1798. 15	A	60	0. 00	6. 87	2-1								
1764. 74	A	8	0. 08	7. 08	3-3		2006. 82	A	75	0. 71	6. 86	2-2	$a^1D - z^3F^{\circ}\dagger$ (9)
1771. 96	A	20	0. 00	6. 97	2-2								
1675. 81	A	35	0. 08	7. 45	3-2	$a^3F - z^3P^{\circ}$	Vac						
1675. 05	A	15	0. 00	7. 37	2-1	(4)	1853. 45	A	22	0. 71	7. 37	2-1	$a^1D - z^3P^{\circ}$ (10)
859. 64	B	(12)	0. 18	14. 54	4-4	$a^3F - y^3F^{\circ}$	1773. 95	A	40	0. 71	7. 67	2-1	$a^1D - z^1P^{\circ}$ (11)
841. 44	B	(12)	0. 08	14. 76	3-3	(5)							
823. 60	B	(20d)	0. 00	14. 99	2-2		1759. 15	A	20	0. 71	7. 73	2-3	$a^1D - z^1F^{\circ}$ (12)
853. 74	B	(10)	0. 08	14. 54	3-4								
836. 62	B	(5)	0. 00	14. 76	2-3								

Zr III—Continued

Zr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 822.11	B	(14)	0.71	15.72	2-3	$a^1D - y^1F^\circ$ (13)	Air 2643.79	A	125	2.41	7.08	3-3	$a^1D - z^1D^\circ$ (26)
812.09	B	(15)	0.71	15.91	2-2	$a^1D - y^1D^\circ$ (14)	2656.46	A	75	2.32	6.97	2-2	
Air 2231.00	A	30	1.09	6.62	2-2	$a^3P - z^1D^\circ$ (15)	2686.28	A	50	2.27	6.87	1-1	
2116.30	A	18	1.09	6.92	2-3	$a^3P - z^3F^\circ$ (16)	2709.05	A	40	2.41	6.97	3-2	
2116.63	A	18	1.03	6.86	1-2		2715.76	A	35	2.32	6.87	2-1	
2139.85	A	10	1.09	6.86	2-2		2593.65	A	100	2.32	7.08	2-3	
2060.83	A	50	1.09	7.08	2-3	$a^3P - z^3D^\circ \uparrow$ (17)	2628.26	A	60	2.27	6.97	1-2	
2077.92	A	60	1.03	6.97	1-2		2448.86	A	100	2.41	7.45	3-2	$a^1D - z^3P^\circ$ (27)
2102.30	A	40	1.00	6.87	0-1		2444.57	A	50	2.32	7.37	2-1	
Vac 1941.09	A	55	1.09	7.45	2-2	$a^3P - z^3P^\circ$ (18)	2406.21	A	40	2.27	7.40	1-0	
1946.62	A	40	1.03	7.37	1-1		2405.81	A	35	2.32	7.45	2-2	
1966.25	A	50	1.09	7.37	2-1		2420.65	A	75	2.27	7.37	1-1	
1937.27	A	35	1.03	7.40	1-0		2382.65	A	8	2.27	7.45	1-2	
1921.97	A	40	1.03	7.45	1-2		2308.12	A	75	2.32	7.67	2-1	$a^1D - z^1P^\circ$ (28)
1936.65	A	30	1.00	7.37	0-1		Vac 1612.38	A	35	2.41	10.07	3-2	$a^1D - y^3P^\circ \uparrow$ (29)
1877.06	A	25	1.09	7.67	2-1	$a^3P - z^1P^\circ \uparrow$ (19)	1631.32	A	25	2.32	9.89	2-1	
Air 2220.25	A	18	1.36	6.92	4-3	$a^1G - z^3F^\circ \uparrow$ (20)	1638.32	A	30	2.27	9.81	1-0	
2159.24	A	22	1.36	7.08	4-3	$a^1G - z^3D^\circ$ (21)	1593.59	A	25	2.32	10.07	2-2	
Vac 1940.20	A	100	1.36	7.73	4-3	$a^1G - z^1F^\circ$ (22)	1620.62	A	25	2.27	9.89	1-1	
Air 2070.43	A	100	1.71	7.67	0-1	$a^1S - z^1P^\circ ?$ (23)	Air 2698.31	A	50	3.09	7.67	2-1	$b^1D - z^1P^\circ$ (30)
2869.06	A	20	2.32	6.62	2-2	$a^1D - z^1D^\circ$ (24)	2664.26	A	100	3.09	7.73	2-3	$b^1D - z^1F^\circ$ (31)
2836.18	A	25	2.27	6.62	1-2		2002.00	A	55	6.62	12.79	2-3	$z^1D^\circ - e^1F$ (32)
2620.56	A	150	2.41	7.12	3-4	$a^3D - z^3F^\circ$ (25)	2080.99	A	75	7.12	13.05	4-5	$z^3F^\circ - e^3G \uparrow$ (33)
2682.16	A	85	2.32	6.92	2-3		2035.42	A	60	6.92	12.99	3-4	
2690.49	A	60	2.27	6.86	1-2		2036.92	A	25	6.86	12.92	2-3	
2735.76	A	40	2.41	6.92	3-3		2056.13	A	25	7.12	13.12	4-3	$z^3F^\circ - e^3D \uparrow$ (34)
2720.06	A	30	2.32	6.86	2-2		2029.94	A	10	6.92	13.00	3-2	
2775.28	A	20	2.41	6.86	3-2		Vac 2000.23	A	45	6.86	13.03	2-1	$z^3F^\circ - e^1P$ (35)
							1974.99	A	50	7.12	13.37	4-4	$z^3F^\circ - e^3F \uparrow$ (36)
							1932.54	A	25	6.92	13.31	3-3	
							1934.34	A	12	6.86	13.24	2-2	
							Air 2162.20	A	30	7.08	12.79	3-3	$z^3D^\circ - e^1F$ (37)

Zr III—Continued

Zr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2089.50 2074.12 2114.10	A A A	22 25 35d	7.08 6.97 7.08	12.99 12.92 12.92	3-4 2-3 3-3	$z^1D^o-e^1G$ (38)	Air 2301.60	A	100	7.67	13.03	1-1	$z^1P^o-e^1P$ (42)
							2252.37	A	20	7.67	13.15	1-2	$z^1P^o-e^1D$ (43)
Vac 1962.03 1946.11 1936.48	A A A	40 12 10	7.08 6.97 6.87	13.37 13.31 13.24	3-4 2-3 1-2	$z^1D^o-e^1F^\dagger$ (39)	2195.44	A	30	7.67	13.29	1-0	$z^1P^o-e^1S$ (44)
							2438.70	A	25	7.73	12.79	3-3	$z^1F^o-e^1F$ (45)
Air 2175.83 2191.15 2218.48 2206.33	A A A A	100 100 15 60	7.45 7.37 7.40 7.37	13.12 13.00 12.96 12.96	2-3 1-2 0-1 1-1	$z^1P^o-e^1D^\dagger$ (40)	2228.10	A	20	7.73	13.27	3-4	$z^1F^o-e^1G$ (46)
2192.05	A	35	7.40	13.03	0-1	$z^1P^o-e^1P^\dagger$ (41)							

Zr IV

I P 33.83 Anal B List A March 1951

REFERENCE

A C. C. Kiess and R. J. Lang, Bur. Std. J. Research 5, 307, RP202 (1930). W L, I, T, I P

Zr IV

Zr IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1201.76 1219.85 1183.98	A A A	50 45 25	0.15 0.00 0.00	10.43 10.12 10.43	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-0\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$4d^2D-5p^2P^o$ (1)	Vac 1599.00 1546.21 1608.02	A A A	30 20 4	10.43 10.12 10.43	18.15 18.10 18.10	$1\frac{1}{2}-2\frac{1}{2}$ $0\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$5p^2P^o-5d^2D$ (4)
633.56 628.66	A A	30 20	0.15 0.00	19.64 19.64	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$4d^2D-4f^2F^o$ (2)	1469.55 1417.78	A A	15 5	10.43 10.12	18.83 18.83	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p^2P^o-6s^2S$ (5)
							874.29 855.69	A A	10 4	10.43 10.12	24.55 24.55	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{4}-0\frac{1}{2}$	$5p^2P^o-7s^2S$ (6)
Air 2163.62 2286.66	A A	15 15	4.72 4.72	10.43 10.12	$0\frac{1}{2}-1\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5s^2S-5p^2P^o$ (3)							

NIOBIUM, Z=41

Nb I

I P 6.74 Anal A List C August 1951

REFERENCE

A C. J. Humphreys and W. F. Meggers, J. Research Nat. Bur. Std. **34**, 515, RP1656 (1945). W L, I, T

Nb I

Nb I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
*2453. 367	A	20	0. 05	5. 08	2½-3½	a 'D-411° (1)	2627. 435	A	60	0. 35	5. 04	4½-4½	a 'F-r 'F°† (11)
							2616. 476	A	30	0. 27	4. 98	3½-3½	
							2558. 936	A	20	0. 14	4. 96	1½-2½	
2981. 636	A	15	0. 35	4. 49	4½-3½	a 'F-u 'D°† (2)	2572. 099	A	15	0. 14	4. 94	1½-2½	a 'F-400°† (12)
2938. 067	A	15	0. 27	4. 47	3½-2½								
2903. 650	A	10	0. 20	4. 45	2½-1½								
2874. 564	A	15	0. 14	4. 43	1½-0½		2592. 190	A	50	0. 35	5. 11	4½-5½	a 'F-s 'G°† (13)
2924. 824	A	10	0. 27	4. 49	3½-3½		2578. 734	A	50	0. 27	5. 05	3½-4½	
2889. 898	A	10	0. 20	4. 47	2½-2½		2565. 410	A	30	0. 20	5. 01	2½-3½	
							2567. 510	A	20	0. 14	4. 95	1½-2½	
2854. 168	A	12	0. 35	4. 67	4½-4½	a 'F-t 'F°† (3)	2597. 138	A	10	0. 20	4. 95	2½-2½	
2825. 180	A	10	0. 27	4. 63	3½-3½		*2524. 985	A	10	0. 14	5. 03	1½-2½	a 'F-q 'F°† (14)
2800. 315	A	10	0. 20	4. 60	2½-2½								
2859. 962	A	15	0. 35	4. 66	4½-5½	a 'F-u 'G°† (4)	*2524. 985	A	10	0. 27	5. 15	3½-2½	a 'F-q 'F°† (15)
2826. 47	A	12	0. 27	4. 63	3½-4½								
2840. 929	A	10	0. 27	4. 61	3½-3½		2504. 648	A	30	0. 35	5. 27	4½-3½	a 'F-r 'D°† (16)
*2808. 050	A	10	0. 20	4. 59	2½-2½		2474. 655	A	15	0. 27	5. 25	3½-2½	
2773. 197	A	50	0. 35	4. 80	4½-3½	a 'F-t 'D°† (5)	2453. 084	A	20	0. 20	5. 23	2½-1½	
2758. 605	A	50r	0. 27	4. 74	3½-2½		2466. 318	A	10	0. 14	5. 15	1½-0½	
2748. 848	A	30r	0. 20	4. 69	2½-1½		2464. 432	A	10	0. 27	5. 27	3½-3½	
2746. 910	A	30r	0. 14	4. 63	1½-0½								
2723. 986	A	15	0. 27	4. 80	3½-3½		2466. 727	A	20	0. 35	5. 35	4½-3½	a 'F-q 'D°† (17)
2716. 100	A	15	0. 20	4. 74	2½-2½		2469. 072	A	25	0. 27	5. 26	3½-2½	
							2445. 066	A	20	0. 20	5. 24	2½-1½	
2755. 632	A	10	0. 20	4. 67	2½-1½	a 'F-t 'D°† (6)							
2687. 149	A	30r	0. 35	4. 94	4½-4½	a 'F-s 'F°† (7)	2461. 757	A	10	0. 35	5. 36	4½-3½	a 'F-p 'D°† (18)
2668. 283	A	40r	0. 27	4. 89	3½-3½		2436. 329	A	10	0. 27	5. 33	3½-2½	
2654. 446	A	60R	0. 20	4. 85	2½-2½								
2647. 500	A	80R	0. 14	4. 80	1½-1½		2462. 889	A	20	0. 35	5. 36	4½-4½	a 'F-p 'F°† (19)
2695. 038	A	30	0. 27	4. 85	3½-2½		2446. 130	A	10	0. 27	5. 31	3½-2½	
2679. 015	A	20	0. 20	4. 80	2½-1½								
2640. 918	A	20	0. 27	4. 94	3½-4½		*2453. 367	A	20	0. 35	5. 38	4½-3½	a 'F-n 'F°† (20)
2628. 493	A	20	0. 20	4. 89	2½-3½								
2623. 507	A	25	0. 14	4. 85	1½-2½		2247. 997	A	80	0. 35	5. 84	4½-3½	a 'F-n 'D°† (21)
							2238. 518	A	80c	0. 27	5. 78	3½-2½	
2763. 380	A	15	0. 35	4. 81	4½-3½	a 'F-u 'G°† (8)	*2232. 545	A	80c	0. 20	5. 72	2½-1½	
							2229. 65	A	30	0. 14	5. 68	1½-0½	
2682. 129	A	10	0. 27	4. 87	3½-3½	a 'F-t 'G°† (9)	2215. 54	A	30c	0. 27	5. 84	3½-3½	
2653. 372	A	10	0. 35	5. 00	4½-5½	a 'F-t 'G°† (10)	2257. 886	A	160	0. 35	5. 81	4½-5½	a 'F-r 'G°† (22)
2612. 377	A	15	0. 27	4. 99	3½-4½		2242. 958	A	20	0. 27	5. 77	3½-4½	
2610. 268	A	20	0. 20	4. 92	2½-3½		2227. 280	A	10	0. 20	5. 74	2½-3½	
2657. 613	A	40r	0. 35	4. 99	4½-4½		*2228. 032	A	100c	0. 14	5. 68	1½-2½	
2649. 515	A	50r	0. 27	4. 92	3½-3½		2250. 308	A	100c	0. 20	5. 68	2½-2½	
2634. 704	A	10	0. 20	4. 88	2½-2½								

Nb I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
1227. 706	A	150c	0. 37	5. 89	4½-4½	a ⁴ F - o ⁴ F°† (23)
1228. 032	A	100c	0. 27	5. 80	3½-3½	
1223. 672	A	60c	0. 20	5. 75	2½-2½	
1220. 184	A	70c	0. 14	5. 70	1½-1½	
1260. 854	A	20	0. 35	5. 80	4½-3½	
1242. 294	A	20	0. 20	5. 70	2½-1½	
1254. 564	A	150	0. 35	5. 82	4½-4½	a ⁴ F - n ⁴ F°† (24)
1232. 545	A	80c	0. 27	5. 79	3½-3½	
1225. 343	A	50	0. 20	5. 74	2½-2½	
1204. 617	A	12	0. 20	5. 79	2½-3½	
1048. 093	A	20	0. 74	4. 79	2½-2½	a ⁴ P - w ⁴ P°† (25)
1053. 086	A	10	0. 74	4. 78	2½-1½	
1987. 286	A	15	0. 65	4. 79	1½-2½	
1965. 48	A	10	0. 62	4. 78	0½-1½	a ⁴ P - s ⁴ D°† (26)
1857. 294	A	10	0. 74	5. 06	2½-3½	
1851. 978	A	15	1. 09	5. 42	3½-3½	a ⁴ G - q ⁴ G° (27)

Nb I—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2782. 356	A	20	1. 15	5. 59	4½-5½	a ⁴ G - u ⁴ H° (28)
2755. 288	A	20	1. 09	5. 57	3½-4½	
2741. 146	A	10	1. 09	5. 59	3½-2½	a ⁴ G - m ⁴ F° (29)
2656. 984	A	10	1. 15	5. 80	4½-4½	a ⁴ G - t ⁴ H°† (30)
2569. 030	A	20	1. 15	5. 96	4½-4½	a ⁴ G - o ⁴ G°† (31)
2583. 103	A	15	1. 09	5. 87	3½-3½	
2851. 446	A	20	1. 26	5. 59	2½-2½	a ⁴ D - m ⁴ F°† (32)
*2808. 050	A	10	1. 40	5. 79	1½-2½	a ⁴ P - 469° (33)
2884. 968	A	12	1. 54	5. 82	5½-5½	t ⁴ H - t ⁴ H° (34)
*2851. 978	A	15	1. 49	5. 82	4½-5½	

Strongest Unclassified Lines of Nb I

Air						Air					
1864. 324	A	20				2277. 426	A	15			
1836. 245	A	30				2246. 176	A	90c			
1819. 215	A	15				2226. 927	A	15			
1554. 103	A	12				2217. 872	A	15			
1368. 860	A	15				2214. 034	A	40c			
1344. 517	A	15c				2211. 46	A	50c			
1337. 744	A	20c									

Nb II

I P 14± Anal A List C August 1951

REFERENCE

A C. J. Humphreys and W. F. Meggers, J. Research Nat. Bur. Std. 34, 481, RP1656 (1945). WL, I, T

Nb II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2849. 557	A	100c	0. 05	4. 39	2-2	a ⁴ D - z ⁴ D°† (1)
2768. 124	A	100rs	0. 05	4. 51	2-3	
2865. 609	A	60	0. 00	4. 31	0-1	
2716. 630	A	150rs	0. 15	4. 69	4-5	a ⁴ D - z ⁴ F°† (2)
2721. 987	A	150rs	0. 10	4. 63	3-4	
2737. 083	A	60	0. 05	4. 56	2-2	
2697. 067	A	200Rs	0. 15	4. 73	4-4	a ⁴ D - z ⁴ D°† (3)
2671. 933	A	200rs	0. 10	4. 72	3-3	
2675. 945	A	80rs	0. 05	4. 67	2-2	
2702. 197	A	60rs	0. 10	4. 67	3-2	
2698. 866	A	100rs	0. 05	4. 63	2-1	
2691. 774	A	60rs	0. 02	4. 60	1-0	
2666. 595	A	50	0. 10	4. 73	3-4	
2646. 258	A	200rs	0. 05	4. 72	2-3	
2656. 076	A	80rs	0. 22	4. 67	1-2	

Nb II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2571. 324	A	60	0. 15	4. 95	4-5	a ⁴ D - z ⁴ G°† (4)
2541. 424	A	50	0. 15	5. 01	4-4	a ⁴ D - z ⁴ F°† (5)
2285. 223	A	60	0. 15	5. 55	4-4	a ⁴ D - y ⁴ D°† (6)
2334. 802	A	100	0. 10	5. 38	3-2	
2372. 730	A	60	0. 00	5. 20	0-1	
2376. 398	A	100	0. 10	5. 29	3-4	a ⁴ D - z ⁴ H° (7)
2352. 837	A	60	0. 10	5. 34	3-2	a ⁴ D - y ⁴ D°† (8)
2280. 450	A	50	0. 10	5. 51	3-3	

Nb II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2295.681	A	300	0.15	5.53	4-3	$a^1D-z^1P^o$
2302.086	A	200	0.10	5.46	3-2	(9)
2324.237	A	60	0.05	5.36	2-1	
2273.566	A	150	0.10	5.53	3-3	
2283.004	A	300	0.05	5.46	2-2	
2309.239	A	100	0.02	5.36	1-1	
2254.953	A	60	0.05	5.53	2-3	
2268.527	A	150	0.02	5.46	1-2	
2300.785	A	50	0.00	5.36	0-1	
2265.676	A	100	0.10	5.55	3-2	$a^1D-z^1P^o$
						(10)
2236.724	A	60	0.15	5.67	4-3	$a^1D-y^1G^o$
						(11)
2242.58	A	50	0.15	5.65	4-3	$a^1D-z^1F^o$
						(12)
3028.436	A	300c	0.44	4.51	4-3	$a^1F-z^1D^o$
3076.864	A	200	0.37	4.39	3-2	(13)
3099.180	A	100	0.32	4.31	2-1	
2982.100	A	100	0.37	4.51	3-3	
3073.232	A	50	0.29	4.31	1-1	
2946.890	A	80	0.32	4.51	2-3	
2950.876	A	800R	0.51	4.69	5-5	$a^1F-z^1F^o$
2941.536	A	500cR	0.44	4.63	4-4	(14)
2910.580	A	400R	0.37	4.61	3-3	
2911.740	A	200R	0.32	4.56	2-2	
2908.236	A	200r	0.29	4.53	1-1	
2994.725	A	300c	0.51	4.63	5-4	
2946.110	A	60	0.37	4.56	3-2	
2931.458	A	70	0.32	4.53	2-1	
2899.230	A	200r	0.44	4.69	4-5	
2897.803	A	200R	0.37	4.63	3-4	
2877.026	A	200cR	0.32	4.61	2-3	
2888.824	A	150r	0.29	4.56	1-2	
2927.804	A	600cR	0.51	4.73	5-4	$a^1F-z^1D^o$
2883.168	A	300cR	0.44	4.72	4-3	(15)
2875.386	A	300cR	0.37	4.67	3-2	
2868.524	A	300R	0.32	4.63	2-1	
2861.091	A	100	0.29	4.60	1-0	
2876.951	A	150	0.44	4.73	4-4	
2841.141	A	80c	0.37	4.72	3-3	
2842.642	A	100r	0.32	4.67	2-2	
2846.280	A	60	0.29	4.63	1-1	
2835.106	A	50	0.37	4.73	3-4	
2780.235	A	150c	0.51	4.95	5-5	$a^1F-z^1G^o$
2793.044	A	80	0.44	4.86	4-4	(16)
2126.54	A	60	0.44	6.24	4-4	$a^1F-x^1F^o$
2255.597	A	200	0.32	5.80	2-3	(17)
2272.730	A	100	0.29	5.72	1-2	
2210.534	A	50	0.37	5.96	3-4	$a^1F-z^1G^o$
						(18)
2131.18	A	60	0.32	6.12	2-2	a^1F-495^o
						(19)
2125.21	A	60	0.37	6.18	3-3	a^1F-500^o
						(20)
2113.08	A	50	0.44	6.28	4-4	$a^1F-x^1G^o$
						(21)
2544.802	A	200R	0.90	5.75	2-2	$a^1P-y^1P^o$
2551.382	A	120	0.76	5.60	1-1	(22)
2562.402	A	120	0.76	5.58	1-0	
2477.379	A	150	0.76	5.75	1-2	
2511.004	A	120	0.69	5.60	0-1	

Nb II—Continued

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2556.933	A	120	0.90	5.72	2-1	$a^1P-z^1S^o$
						(23)
2352.338	A	60	0.90	6.14	2-3	$a^1P-x^1D^o$
2321.996	A	30	0.76	6.08	1-2	(24)
*2356.290	A	50	0.90	6.13	2-1	
2346.532	A	50	0.90	6.16	2-3	$a^1P-w^1D^o$
						(25)
2314.850	A	50	0.90	6.23	2-2	$a^1P-x^1P^o$
2257.537	A	60	0.76	6.23	1-1	(26)
2810.810	A	100	1.03	4.72	4-3	$a^1F-z^1D^o$
						(27)
2680.061	A	50	1.03	5.63	4-4	$a^1F-y^1G^o$
						(28)
2632.510	A	60	1.03	5.72	4-4	$a^1F-y^1F^o$
2594.736	A	50	0.98	5.73	3-3	(29)
2620.440	A	80	0.93	5.64	2-2	
2560.112	A	60	0.98	5.80	3-3	$a^1F-x^1F^o$
						(30)
2437.411	A	50	0.93	5.99	2-1	$a^1F-z^1P^o$
						(31)
2412.460	A	150	1.03	6.14	4-3	$a^1F-x^1D^o$
2369.954	A	100	0.93	6.13	2-1	(32)
2387.521	A	80	0.98	6.14	3-2	$a^1F-w^1D^o$
2365.215	A	70	0.93	6.14	2-2	(33)
2274.128	A	100	1.03	6.45	4-4	$a^1F-v^1F^o$
2270.180	A	150	0.98	6.41	3-3	(34)
2250.463	A	100h	0.93	6.41	2-2	
2791.742	A	80	1.21	5.63	5-4	$a^1H-y^1G^o$
2745.725	A	40	1.17	5.67	4-3	(35)
2740.185	A	100	1.21	5.72	5-4	$a^1H-y^1F^o$
						(36)
2590.940	A	200R	1.26	6.02	6-6	$a^1H-y^1H^o$
2583.982	A	250R	1.21	5.99	5-5	(37)
2642.233	A	150rs	1.17	5.84	4-4	
2555.626	A	60	1.17	6.00	4-4	$a^1H-w^1F^o$
						(38)
2601.285	A	100	1.26	6.00	6-6	$a^1H-z^1I^o$
						(39)
2521.404	A	150	1.17	6.07	4-4	$a^1H-y^1G^o$
						(40)
2479.933	A	80	1.26	6.23	6-5	$a^1H-x^1G^o$
2435.952	A	50	1.21	6.28	5-4	(41)
2433.792	A	60	1.17	6.24	4-3	
2354.040	A	50	1.21	6.45	5-4	$a^1H-v^1F^o$
*2356.290	A	50	1.17	6.41	4-3	(42)
2229.716	A	150h	1.26	6.79	6-5	$a^1H-w^1G^o$
2240.65	A	50h	1.21	6.72	5-4	(43)
2262.132	A	80	1.17	6.63	4-3	
2974.094	A	400rs	1.35	5.50	5-6	$a^1G-z^1H^o$
3032.767	A	400rs	1.31	5.38	4-5	(44)
3064.530	A	250r	1.26	5.29	3-4	

Nb II—Continued

Nb II—Continued

A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 0. 712	A	100	1. 35	5. 63	5-4	$a^3G - y^3G^\circ \uparrow$ (45)	Air 2985. 04	A	50	1. 61	5. 75	3-2	$a^3D - y^3P^\circ \uparrow$ (58)
1. 122	A	80	1. 35	6. 00	5-4	$a^3G - w^3F^\circ \uparrow$	2715. 882	A	40	1. 61	6. 16	3-3	$a^3D - w^3D^\circ \uparrow$
7. 765	A	35	1. 31	5. 94	4-3	(46)	2730. 324	A	60	1. 62	6. 14	1-1	(59)
5. 247	A	80	1. 26	5. 90	3-2								
5. 806	A	100	1. 35	6. 23	5-5	$a^3G - r^3G^\circ \uparrow$	2540. 611	A	80	1. 81	6. 67	2-3	$b^3P - v^3D^\circ \uparrow$
3. 878	A	50	1. 31	6. 28	4-4	(47)	2530. 968	A	80	1. 81	6. 68	1-2	(60)
8. 283	A	60	1. 26	6. 24	3-3								
2. 047	A	60	1. 26	6. 28	3-4								
6. 994	A	150	1. 35	6. 45	5-4	$a^3G - v^3F^\circ \uparrow$	2908. 88	A	80	1. 83	6. 07	4-4	$a^3G - y^3G^\circ$
8. 687	A	150	1. 31	6. 41	4-3	(48)							(61)
8. 484	A	120	1. 26	6. 41	3-2		2360. 302	A	80	1. 83	7. 05	4-4	$a^3G - r^3G^\circ$
6. 732	A	100	1. 35	6. 79	5-5	$a^3G - w^3G^\circ \uparrow$							(62)
1. 136	A	30	1. 31	6. 72	4-4	(49)							
7. 611	A	50	1. 35	6. 72	5-4								
9. 589	A	25	1. 31	6. 63	4-3								
2. 568	A	200c	1. 40	5. 55	3-4	$a^3P - y^3D^\circ$	2753. 133	A	200c	1. 90	6. 38	6-6	$a^3I - z^3I^\circ$
4. 735	A	250	1. 34	5. 42	2-3	(50)	2673. 566	A	250rs	1. 90	6. 52	6-5	$a^3I - y^3H^\circ$
1. 55	A	90c	1. 40	5. 42	3-3								(63)
9. 528	A	40c	1. 34	5. 38	2-2								(64)
5. 76	A	50	1. 32	5. 20	1-1								
7. 115	A	60c	1. 40	5. 38	3-2		2252. 210	A	250	1. 98	7. 46	5-5	$b^3G - v^3G^\circ \uparrow$
4. 27	A	30c	1. 34	5. 20	2-1		2264. 556	A	150	1. 97	7. 42	4-4	(65)
9. 65	A	60	1. 32	5. 26	1-0		2274. 198	A	60	1. 92	7. 35	3-3	
0. 28	A	200c	1. 40	5. 53	3-3	$a^3P - z^3P^\circ$	2269. 865	A	100	1. 98	7. 42	5-4	
3. 97	A	20c	1. 34	5. 46	2-2	(51)	2294. 983	A	60	1. 97	7. 35	4-3	
8. 21	A	80c	1. 32	5. 36	1-1								
9. 818	A	150c	1. 40	5. 46	3-2								
5. 26	A	100c	1. 34	5. 36	2-1								
5. 890	A	100c	1. 34	5. 53	2-3								
7. 67	A	150c	1. 32	5. 46	1-2								
1. 956	A	80	1. 32	5. 44	1-1	$a^3P - z^3P^\circ \uparrow$	2715. 344	A	50	2. 00	6. 55	4-3	$b^3G - y^3F^\circ$
7. 050	A	100	1. 32	5. 55	1-2	(52)							(66)
7. 693	A	100c	1. 40	5. 81	3-2	$a^3P - z^3S^\circ$	3022. 738	A	200	2. 15	6. 23	6-5	$b^3H - x^3G^\circ \uparrow$
8. 78	A	50c	1. 34	5. 81	2-2	(53)	2978. 943	A	80	2. 13	6. 28	5-4	(67)
4. 97	A	30c	1. 32	5. 81	1-2		3018. 853	A	100	2. 16	6. 24	4-3	
5. 850	A	60c	1. 34	6. 47	2-2	$a^3P - w^3P^\circ \uparrow$							
5. 344	A	50c	1. 32	6. 45	1-1	(54)	2686. 388	A	100	2. 28	6. 88	3-2	$a^3F - x^3D^\circ$
7. 101	A	80	1. 34	6. 51	2-3	$a^3P - 527^\circ \uparrow$							(68)
						(55)							
0. 717	A	150	1. 51	5. 65	2-3	$a^3D - z^3F^\circ$	2979. 875	A	80	2. 65	6. 79	4-5	$c^3F - w^3G^\circ \uparrow$
						(56)	3001. 125	A	50	2. 61	6. 72	3-4	(69)
1. 870	A	60	1. 51	6. 55	2-3	$a^3D - y^3F^\circ$	3025. 372	A	40	2. 55	6. 63	2-3	
						(57)							
							2771. 398	A	50	2. 60	7. 05	5-4	$a^3H - x^3G^\circ$
													(70)

Strongest Unclassified Lines of Nb II

Air 1. 85	A	150				Air 2203. 64	A	100h				
7. 707	A	100				2160. 27	A	100				
1. 830	A	80h				2109. 43	A	150				
7. 496	A	100										