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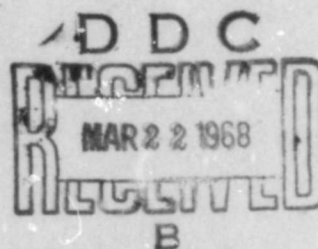
AFCRL-68-0095
FEBRUARY 1968
SPECIAL REPORTS, NO. 73



AIR FORCE CAMBRIDGE RESEARCH LABORATORIES

L. G. HANSCOM FIELD, BEDFORD, MASSACHUSETTS

**Bibliography of AFCRL Publications
From 1 July 1966 to 30 September 1967**



**OFFICE OF AEROSPACE RESEARCH
United States Air Force**



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Abstract

This bibliography lists all AFCRL in-house reports, journal articles, and contractor reports issued from 1 July 1966 through 30 September 1967.

Preface

This is a supplement to the "Bibliography of AFCRL In-House Technical Reports" (AFCRL 67-0146, Special Reports No. 61) of March 1967, which listed all AFCRL in-house reports published prior to 1 July 1966. Future supplements will be issued quarterly.

Until 1 March 1967, AFCRL journal articles were reissued in the in-house reports series. In this bibliography, such journal articles will have, in addition to the other information, an AFCRL report number, a series designation and number, and, if available, an AD number.

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Bibliography of AFCRL Publications From 1 July 1966 to 30 September 1967

INTRODUCTION

This bibliography lists all in-house reports, journal articles, and contractor reports issued from 1 July 1966 to 30 September 1967.

Part I lists all in-house reports by the series in which they were issued; Part II lists all in-house reports, journal articles, and contractor reports by the Laboratory responsible for their preparation. In Part I, the reports are listed numerically by series; in Part II, in-house reports and journal articles are listed alphabetically by author, and contractor reports are listed numerically by the AFCRL report number.

In the listings, the following code designations are given to identify each report:

- a. AD (plus a number)—This is the document number assigned by the Defense Documentation Center. It is given if available when this bibliography is published.
- b. AFCRL (year)-(number), such as AFCRL-66-0201—This is the document number assigned by Air Force Cambridge Research Laboratories.
- c. Contractor reports are identified by the AFCRL number, the contract number under which the research reported on was performed (for example, AF19(628)-4105), and an AD number, if available.

Types of AFCRL Reports

AFCRL technical reports include those prepared in-house and those prepared by contractors. The in-house reports are issued in five series, and the contractor reports are of two types. The in-house series and the types of contractor reports are described below.

In-House Report Series

AIR FORCE SURVEYS IN GEOPHYSICS

This series is utilized for two types of environmental research information: (a) research results that are directly applicable to design, developmental, or operational problems of the Air Force, and (b) survey or state-of-the-art papers in a specific area of the environmental sciences.

INSTRUMENTATION PAPERS

Instrumentation Papers present information about new techniques, procedures, instrumentation, components, or vehicles utilized in AFCRL research efforts.

PHYSICAL SCIENCES RESEARCH PAPERS

In general, these papers report results of AFCRL research in the information and mathematical sciences, microwave physics, laser physics, solid state sciences, and spectroscopy.

ENVIRONMENTAL RESEARCH PAPERS

Papers reporting results of AFCRL research in the environmental sciences, including space physics, upper atmosphere physics, optical physics, meteorology, and the terrestrial sciences are published in this series.

SPECIAL REPORTS

The Special Reports series provides a publication medium for (a) papers that do not report specific research results, such as bibliographies and proceedings of symposia, (b) papers by special employees of AFCRL, such as summer employees or cooperative students, (c) theses written by AFCRL employees, and (d) significant management and administrative reports. Other special categories may be accommodated in this series as the need arises.

Contractor Reports

SCIENTIFIC REPORTS

Scientific Reports are normally prepared when a definable phase of the research has been completed, when the research effort reaches a point where it

is natural and logical to summarize the results, or if no other scientific report was issued during the contract year. Scientific Reports cover all phases of work undertaken during the period of the report, including the contents of papers published in scientific journals or presented at scientific meetings.

FINAL REPORTS

These reports summarize the work performed under the contract.

How to Obtain Copies of AFRL Technical Reports

The reports listed in this bibliography can be obtained by agencies of the Department of Defense, their contractors, and other government agencies from:

Defense Documentation Center
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All other persons and organizations desiring copies of AFRL technical reports should apply to the:

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Part I. AFCRL In-House Reports by Series

Air Force Surveys in Geophysics

AIR FORCE SURVEYS IN GEOPHYSICS

- No. 182 Statistics of Parameters Affecting Tethered Balloon Flights, Joseph Hess, AFCRL-66-480, July 1966, AD637 853.
- No. 183 Speculative Mean Monthly Temperatures in the Arctic (75°N) Stratosphere, 25 to 55 Kilometers, Arthur J. Kantor, AFCRL-66-487, July 1966 (Reprint) AD637 279.
- No. 184 U. S. Supplementary Atmosphere, K. S. W. Champion, AFCRL-66-564, Aug. 1966, AD640 265.
- No. 185 Corpuscular Radiation Environment of a Low-Altitude, Polar-Orbiting Earth Satellite—A Brief Summary, V. G. Smalley, Capt, USAF, D. F. Smart, and R. C. Filz, AFCRL-66-540, Aug. 1966, AD640 323.
- No. 186 Atmospheric Humidity Atlas—Northern Hemisphere, I. I. Gringorten, H. A. Salmela, I. Solomon, and J. Sharp, Major, USAF, AFCRL-66-621, Aug. 1966, AD642 429.
- No. 187 Meteorological Aspects of Constant-Level Balloon Operations in the Southwestern United States, Bernard D. Gildenberg, AFCRL-66-706, Oct. 1966, AD644 895.
- No. 188 Some Aspects of Night Visibility Useful for Air Force Operations, J. B. Taylor and S. M. Silverman, AFCRL-66-862, Dec. 1966 (Limited Distribution) AD811 275L.
- No. 189 Mean Monthly Atmospheres for 15°N, Allen E. Cole, AFCRL-67-0120, Feb. 1967, AD651 913.
- No. 190 Mesoscale Structure of the Atmosphere in Regions of Clear-Air Turbulence, Volume I, Samuel Penn and Thomas A. Pisinski, AFCRL-67-0115, Apr. 1967, AD654 267.
- No. 191 Distributions of Radar Echoes Over the United States, Donald D. Grantham and Arthur J. Kantor, AFCRL-67-0232, Apr. 1967, AD656 310.
- No. 192 Variations With Season and Latitude of Density, Temperature, and Composition in the Lower Thermosphere, K. S. W. Champion, AFCRL-67-0161, Mar. 1967, AD654 688.
- No. 193 A Statistical Model of the Temperature Field at Supersonic Aircraft Altitudes, Irving I. Gringorten, AFCRL-67-0274, May 1967, AD656 309.
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- No. 195 A Satellite-to-Satellite HF Ionospheric Propagation Environment Study, J. Videberg, M. S. Wong, and G. M. Daniels, AFCRL-67-0374, June 1967.
- No. 196 Clear Lines-of-Sight from Aircraft, Eugene A. Bertoni, AFCRL-67-0435, Aug. 1967.
- No. 197 Classified Report, R. Nadile, J. Lovett, and L. Marcotte, AFCRL-67-0498, Aug. 1967 AD383 954.

Environmental Research Papers

ENVIRONMENTAL RESEARCH PAPERS

- No. 208 Parameters of Turbulent Atmospheres, S. P. Zimmerman, AFCRL-66-488, July 1966 (Reprint) AD637-398.
- No. 209 Chemical Releases at High Altitudes, N.W. Rosenberg, AFCRL-66-490, July 1966 (Reprint) AD637 736.
- No. 210 Upper-Bound Estimate of the Incidence of Large Spheric Sources in Certain Areas of the United States in Late 1959, A. Ganio and J. A. Sullivan, AFCRL-66-498, July 1966 (Reprint) AD637 706.
- No. 211 General Behavior of 6300 Å (OI) at Sacramento Peak, New Mexico, W. Bellew and S. Silverman, AFCRL-66-415, June 1966 (Reprint) AD639 889.
- No. 212 The Origin of Continents, J. W. Salisbury and L. B. Ronca, AFCRL-66-510, July 1966 (Reprint) AD639 893.
- No. 213 Correlation Between Atmospheric Backscattering and Meteorological Visual Range, Robert W. Fenn, AFCRL-66-549, Aug. 1966 (Reprint) AD639 898.
- No. 214(II) Rapid Remote Sensing by Spectrum Matching Technique. 2. Application in the Laboratory and in Lunar Observations, Graham R. Hunt, John W. Salisbury, and John W. Reed, AFCRL-67-0158, Mar. 1967 (Reprint).
- No. 215 An Analysis of Sonic Anemometer Measurements from the Cedar Hill Tower, J. Chandran Kaimal, AFCRL-66-542, Aug. 1966, AD641 226.
- No. 216 Shear Strength, Polymorphism, and Mechanical Behavior of Olivine, Enstatite, Diopside, Labradorite, and Pyrope Garnet: Tests to 920°C and 60 kb, R. E. Riecker and T. P. Rooney, AFCRL-66-543, Aug. 1966, AD642 925.
- No. 217 Daytime Observation of the Comet 1965f at the Sacramento Peak Observatory, G. William Curtis, and Sacramento Peak Observatory Staff, AFCRL-66-574, Aug. 1966 (Reprint) AD645 967.
- No. 218 Fourier Transform of the Sunspot Cycle, Kurt Toman, AFCRL-66-575, Aug. 1966 (Reprint) AD639 895.
- No. 219 Zenith Skylight Intensity and Color During the Total Solar Eclipse of 20 July 1963, William E. Sharp, John W. F. Lloyd, and S. M. Silverman, AFCRL-66-576, Aug. 1966 (Reprint) AD639 890.
- No. 220 The Size of Low-Latitude Ionospheric Irregularities Determined from Observations of Discrete Sources of Different Angular Diameters, Jules Aarons and Donald A. Guidice, AFCRL-66-573, Aug. 1966 (Reprint) AD639 892.
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- No. 222 Electron and Proton Observations, Ludwig Katz, AFCRL-66-582, Aug. 1966 (Reprint) AD641 358.

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- No. 223 Measurement of the Infrared Horizon of the Earth, R.G. Walker, C. V. Cunniff, A. P. D'Agati, AFCRL-66-631, Sept. 1966, AD642 928.
- No. 224 Classified Report, John L. Heckscher, Capt, USAF, and Edward A. Lewis, AFCRL-66-640, Sept. 1966.
- No. 225 On the Correlation Between Granule and Supergranule Intensity Fields, George W. Simon, AFCRL-66-644, Sept. 1966 (Reprint) AD642 924.
- No. 226 Determination of the Solar-Rotation Rate from the Motion of Identifiable Features, Fred Ward, AFCRL-66-645, Sept. 1966 (Reprint) AD642 929.
- No. 227 Spectra of Nine Discrete Radio Sources in the 20-40 Mc/s Range, D.A. Guidice, AFCRL-66-663, Sept. 1966 (Reprint) AD642 923.
- No. 228 Shear Deformation of Nevada Test Site Rocks: Tests to 60 kb and 900°C, R. E. Riecker and T. P. Rooney, AFCRL-66-694, Oct. 1966, AD645 938.
- No. 229 The Leakage Attenuation of Continental Crustal P Waves, N.A. Haskell, AFCRL-66-707, Oct. 1966 (Reprint) AD645 968.
- No. 230 Ion Composition Measurements and Related Ionospheric Processes in the D and Lower E Regions, R.S. Narcisi, AFCRL-66-715, Oct. 1966 (Reprint) AD646 049.
- No. 231 The Light and Dark Areas of Mars, John W. Salisbury, AFCRL-66-722, Oct. 1966 (Reprint) AD649 391.
- No. 232 AFCRL Radio Observations of May's Eclipse, John P. Castelli and Ronald M. Straka, AFCRL-66-734, Oct. 1966 (Reprint) AD645,969.
- No. 233 Computed Electron, Ion, and Neutral Density Profiles for the Solar Eclipse of 12 November 1966, T. J. Keneshea and R. J. Fowler, AFCRL-66-741, Oct. 1966, AD646 975.
- No. 234 Temperature and Ozone Variations Near Tropopause Level Over Hurricane Isbell, Samuel Penn, AFCRL-66-758, Oct. 1964 (Nov. 1966 Reprint) AD647 013.
- No. 235 A Proposed Multispectral Photography Experiment for AES Lunar Orbital Mission, John F. Cronin, John B. Adams, Robert N. Colwell, and William G. Tift, AFCRL-66-796, Dec. 1966 (Reprint) AD647 008.
- No. 236 Proton-Induced Hydroxyl Formation on the Lunar Surface, E. J. Zeller, L. B. Ronca, and P. W. Levy, AFCRL-66-795, Dec. 1966 (Reprint) AD647 009.
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- No. 240 Further Indications of a Lunar Synodical Period in Observations of Sunshine, Iver A. Lund, AFCRL-66-806, Dec. 1966 (Reprint) AD648 436.
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- No. 243 On Turbulent Diffusion in an Arbitrarily Stratified Atmosphere, F.K. Wippermann, AFCRL-66-836, Dec. 1966 (Reprint) AD648 442.
- No. 244 Velocity Characteristics of Some Clear-Air Jet Angels, Keith A. Browning and David Atlas, AFCRL-66-837, Dec. 1966 (Reprint) AD648 437.
- No. 245 Radio Spectrum of an Active Solar Region Determined from the 20 July 1963 Eclipse, John P. Castelli and John Clemens, AFCRL-66-839, Dec. 1966 (Reprint) AD648 438.
- No. 246 Methods of Estimating the Probability of Clear Lines-of-Sight, or Sunshine, Through the Atmosphere, Iver A. Lund, AFCRL-66-838, Dec. 1966 (Reprint) AD648 441.
- No. 247 Some Lagrangian Properties of Turbulence Deduced from Atmospheric Diffusion Experiments, Duane A. Haugen, AFCRL-66-851, Dec. 1966 (Reprint) AD648 439.
- No. 248 Optimizing the Radar Detection of Clear Air Turbulence, David Atlas, Kenneth R. Hardy, and Keikichi Naito, AFCRL-66-854, Dec. 1966 (Reprint) AD648 723.
- No. 249 Plasmas in Space, Morton A. Levine, AFCRL-66-867, Dec. 1966 (Reprint) AD648 725.
- No. 250 Latitudinal Effects on Satellite Scintillations, J. Aarons, H. M. Silverman, and B. A. Ramsey, AFCRL-66-864, Dec. 1966 (Reprint) AD648 896.
- No. 251 Measurements of 1/2 to 4 MeV Trapped Protons in the Equatorial Magnetosphere, F.R. Paolini, G.C. Theodoridis, W.C. Hadley, L. Katz, and D. Smart, AFCRL-66-865, Dec. 1966 (Reprint) AD648 724.
- No. 252 Magnetic Storm Enhancement of the 5577 Å (OI) Airglow Emission Intensity, S.M. Silverman and W. Bellew, AFCRL-66-866, Dec. 1966 (Reprint) AD648 893.
- No. 253 Aerosol Measurements in the Troposphere and Stratosphere, L. Elterman, AFCRL-67-0003, Jan. 1967 (Reprint) AD648 726.

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- No. 254 Significance of Iron-Rich Silicates in the Mezö-Madaras Chondrite, Robert T. Dodd, Jr., W. Randall Van Schmus, and Ursula B. Marvin, AFCRL-67-0012, Jan. 1967 (Reprint) AD649 181.
- No. 255 A Preliminary Report on Doppler Radar Observation of Turbulence in a Thunderstorm, Ralph J. Donaldson, Jr., AFCRL-67-0015, Jan. 1967, AD649 779.
- No. 256 Upper Atmosphere O-Atom Densities by Wind Tunnel Simulation of Nitric Oxide Releases, Dan Golomb and R. Earl Good, AFCRL-67-0053, Jan. 1967 (Reprint) AD649 179.
- No. 257 Estimates of Spectral Energy Density Applied to Vertical Profiles of the Horizontal Wind in the Lower Ionosphere, Thomas M. Noel, AFCRL-67-0054, Jan. 1967 (Reprint) AD649 176.
- No. 258 Vertical Cutoff Rigidities in the South Atlantic, M. A. Shea and D. F. Smart, AFCRL-67-0082, Jan. 1967 (Reprint) AD649 872.
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- No. 261 Experimental Evaluation of Various Rigidity Models, J. F. Kenney, J. Gauger, M. A. Shea, and D. F. Smart, AFCRL-67-0099, Feb. 1967 (Reprint) AD649 875.
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- No. 265 Radar Observations of Insects in Free Flight, Kenneth M. Glover, Kenneth R. Hardy, Thomas G. Konrad, W. N. Sullivan, and A. S. Michaels, AFCRL-67-0127, Feb. 1967 (Reprint) AD650 705.
- No. 266 Measurements of Tidal Oscillations Above 120 Kilometers, S. P. Zimmerman and F. A. Marcos, AFCRL-67-0131, Apr. 1967, AD654 686.
- No. 268 Observations on the Release of a Cloud of Barium Atoms and Ions in the Upper Atmosphere, Keith H. Lloyd and Dan Golomb, AFCRL-67-0144, Apr. 1967, AD654 687.
- No. 269 Classified Report, Richard S. Williams, Jr., 1/Lt, USAF, and Robert W. Fenn, AFCRL-67-0398, June 1967, AD382 730.

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- No. 270 Radiometric Observations of the Planets Jupiter, Venus, and Mars at a Wavelength of 8.6 Millimeters, P. M. Kalaghan and K. N. Wulfsberg, AFCRL-67-0409, July 1967.
- No. 271 A Rocket Measurement of Low Energy Protons, George A. Kuck, Capt, USAF, AFCRL-67-0461, Aug. 1967.
- No. 272 On the Accuracy of Certain Approximations for the Chapman Function, W. Swider, Jr., and M. E. Gardner, AFCRL-67-0468, Aug. 1967, AD658 826.
- No. 273 Shear Strength of Twelve Grossly Deformed Metals at High Pressures and Temperatures, R. E. Riecker, L. C. Towle, and T. P. Rooney, AFCRL-67-0475, Aug. 1967.

Instrumentation Papers

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- No. 104 **Nomographs Calculate Values for Twin-T Notch Filter**, Tom G. Purnhagen, Capt, USAF, AFCRL-66-485, July 1966 (Reprint) AD637 392.
- No. 105 **A System for Measuring Vector Magnetic Fields From Sounding Rockets**, P.G. Forsyth and R.O. Hutchinson, AFCRL-66-565, Aug. 1966, AD639 327.
- No. 106 **A Photoelectric Focus and Seeing Monitor for Solar Telescopes**, J.M. Beckers, AFCRL-66-509, July 1966 (Reprint) AD639 348.
- No. 107 **Simple Interferometric Manometer**, S.B. Herskovitz, AFCRL-66-515, July 1966 (Reprint) AD640 897.
- No. 108 **A Microwave Correlation Radiometer**, William B. Goggins, Jr., Capt, USAF, AFCRL-66-534, Aug. 1966, AD639 328.
- No. 109 **Tuning Fork Choppers for Infrared Spectrometers**, Herbert G. Lipson and James R. Littler, AFCRL-66-547, Aug. 1966 (Reprint) AD640 588.
- No. 110 **New Electron Beam Optics for the Preparation of Insulating Crystals by the Floating Zone Method**, C.E. Ryan, D.P. Considine, J.J. Hawley, and R.C. Marshall, AFCRL-66-539, Aug. 1966, AD640 961.
- No. 111 **The Multiplate Antenna**, Allan C. Schell, Peter R. Franchi, William B. Goggins, Jr., Capt, USAF, and George R. Forbes, AFCRL-66-535, Aug. 1966, AD642 430.
- No. 112 **A Gyro-Stabilized Airborne Eclipse Spectrograph**, Richard B. Dunn, AFCRL-66-597, Aug. 1966 (Reprint) AD640 586.
- No. 113 **3-D Radar Based on Phase-in-Space Principle**, William G. Mavroides, Lancer G. Dennett, and Leon S. Dorr, AFCRL-66-611, Aug. 1966 (Reprint) AD640 587.
- No. 114 **Comparison of Reflective Properties of Corner Reflector Clusters and Luneburg Lens Reflectors**, F.S. Holt, AFCRL-66-626, Aug. 1966, AD640 577.
- No. 115 **Polarization Properties of Far Infrared Beamsplitters**, Ernest V. Loewenstein and Amos Engelsrath, AFCRL-66-536, Aug. 1966, AD640 960.
- No. 116 **Optical Pulse-Ranging with the Nanolite**, Heinz Fischer, AFCRL-66-653, Sept. 1966, AD642 426.
- No. 117 **Improved Spin Wave Instability Threshold Plotter**, Tom G. Purnhagen, Capt, USAF, AFCRL-66-702, Oct. 1966 (Reprint) AD644 813.
- No. 118 **The Influence of Cathode Thickness and Aging on the Photoelectric Yields of LiF and CsI in the xuv**, L. Heroux, W.J. McMahon, and H.E. Hinteregger, AFCRL-66-703, Oct. 1966 (Reprint) AD644 812.
- No. 119 **Apparatus for Seismic Modelling Optically**, Ker C. Thomson, AFCRL-66-705, Oct. 1966 (Reprint) AD645 123.

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- No. 120 Tropopause Detected by Radar, David Atlas, Kenneth R. Hardy, Kenneth M. Glover, Isadore Katz, and Thomas G. Konrad, AFCRL-66-714, Oct. 1966 (Reprint) AD644 811.
- No. 121 Technique for Fabrication of Al-Al₂O₃-Pb Superconducting Tunnel Diodes, José H. Silva, Jr., SSgt, USAF, AFCRL-66-750, Nov. 1966, AD645 750.
- No. 122 Analytical Description of a Fabry-Perot Photoelectric Spectrometer, G. Hernandez, AFCRL-67-0020, Jan. 1967 (Reprint) AD649 395.
- No. 123 Tests of a Method for Making Geodetic Ties by Observing a Satellite Optical Beacon, Donald H. Eckhardt, AFCRL-67-0074, Jan. 1967, (Reprint) AD650 013.
- No. 124 On-Line Debugging Techniques: A Survey, Thomas G. Evans and D. Lucille Darley, AFCRL-67-0080, Jan. 1967 (Reprint) AD650 016.
- No. 125 A Unique Double Deposition System, J. H. Bloom, C. E. Ludington, and R. L. Phipps, AFCRL-67-0096, Feb. 1967 (Reprint) AD650 012.
- No. 126 Gemini VII I-15 Cryogenic Interferometer Calibrations, R. M. Nadile, V. Turner, L. Marcotte, and J. Lovett, AFCRL-67-0391, June 1967 (Limited Distribution) AD818 374L.
- No. 127 Nanosecond Time Differences by Dynamic Storage of Flip-Flop Pulses, Gunther Franke, Roberto Peveraro, and Heinz Fischer, AFCRL-67-0545, Sept. 1967.
- No. 128 Determining the Degree of Ambiguity in Frost Point Temperatures as Measured by an Optical Dew Point Sensor, Russell M. Peirce and Ruben H. Guenther, AFCRL-67-0147, Mar. 1967, AD651 651.
- No. 130 The SPARSA Atmospheric Electricity Detection System as Modified by the Addition of the Image Storage Tube Electro-Optical Triangulation Computer, Part I, Bernard D. Weiss, AFCRL-67-0183, Mar. 1967, AD651 818.

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- No. 247 The History and Current Status of Fourier Transform Spectroscopy, Ernest V. Loewenstein, AFCRL-66-486, July 1966 (Reprint) AD637 735.
- No. 248 A Classification of PR Biquadratic Immittance Functions and Their Realization Using a Perfectly Coupled and Center Branch Augmented Two-Port, Kurt H. Haase, AFCRL-66-504, July 1966 (Reprint) AD637 275.
- No. 249 Far Infrared Study of the Copper Halides at Low Temperatures, J. N. Plendl, A. Hadni, J. Claudel, Y. Henninger, G. Morlot, P. Striner, and L. C. Mansur, AFCRL-66-511, July 1966 (Reprint) AD640 641.
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- No. 251 Molecular Beams Formed by Arrays of 3-40 μ Diameter Tubes, John C. Johnson, A. T. Stair, Jr., and James L. Pritchard, AFCRL-66-514, July 1966 (Reprint) AD640 642.
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