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Compiled by T. W. Moorehead

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13. ABSTRACT *(Maximum 200 words)*

This document lists the significant publications and presentations of the Space Sciences Laboratory during the period January 1-December 31, 1993. Entries in the main part of the document are categorized according to NASA Reports (arranged by report number), Open Literature, and Presentations (arranged alphabetically by title). Also included for completeness is an Appendix (arranged by report number) listing preprints issued by the Laboratory during this reporting period. Some of the preprints have not been published; those already published are so indicated. Most of the articles listed under Open Literature have appeared in refereed professional journals, books, monographs, or conference proceedings. Although many published abstracts are eventually expanded into full papers for publications in scientific and technical journals, they are often sufficiently comprehensive to include the significant results of the research reported. Therefore, published abstracts are listed separately in a subsection under Open Literature. Questions or requests for additional information about the entries in this report should be directed to Tauna W. Moorehead (ES02; 544-7581) or to one of the authors. The organizational code of the cognizant SSL branch or office is given at the end of each entry.

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NASA REPORTS

Conference Publication

1. NASA/MSFC FY92 Earth Science and Applications Program Research Review. NASA CP-3184, January 1993. J. E. Arnold and F. W. Leslie (editors). (ES43)

2. Microgravity Studies of Organic and Polymeric Materials. NASA CP-3250, December 1993. D. O. Frazier, C. E. Moore, and B. H. Cardelino (editors). (ES01)

Technical Memorandum

1. Materials Science on Parabolic Aircraft - The FY87-89 KC-135 Microgravity Test Program. NASA TM-4456 (1993). Peter A. Curreri (editor). (ES75)

2. Terrestrial Environment (Climatic) Criteria Guidelines for Use in Aerospace Vehicle Development, 1993 Revision. NASA TM-4511 (1993). D. L. Johnson (editor). (ES44)

3. Spacelab J Experiments Descriptions - First Edition. NASA TM-4517 (1993). Teresa Y. Miller (editor). (ES76)

4. Imaging the Sun in Hard X-Rays Using Fourier Telescopes. NASA TM-108390, January 1993. J. W. Campbell. (ES65)

5. Wildfire and MAMS Data from STORMFEST. NASA TM-108393, January 1993. G. J. Jedlovec and G. S. Carlson. (ES43)

6. NASA Marshall Space Flight Center Solar Observatory Report - July-December 1992. NASA TM-108396, February 1993. J. E. Smith. (ES52)

7. Calibration, Navigation, and Registration of MAMS Data for FIFE. NASA TM-108397, February 1993. G. J. Jedlovec and R. J. Atkinson. (ES43)

8. Space Science Laboratory Publications and Presentations - January 1-December 31, 1992. NASA TM-108402, April 1993. T. W. Moorehead (Compiler). (ES01)

9. Development of a Large Field-of-View KD*P Modulator--Center Director's Discretionary Fund Final Report (Project No. 91-23). NASA TM-108410, June 1993. E. A. West. (ES52)

Technical Memorandum (Concluded)

10. A Browse Facility for Earth Science Remote Sensing Data -- Center Director's Discretionary Fund Final Report (Project 91-09). NASA TM-108413, May 1993. P. J. Meyer. (ES44)

11. NASA Marshall Space Flight Center Solar Observatory Report -- January-June 1993, NASA TM-108417, July 1993. J. E. Smith. (ES52)

12. Optimization of the Processing Parameters of High Temperature Superconducting Glass-Ceramics--Center Director's Discretionary Fund Final Report (Project #91-04). NASA TM-108421, September 1993. E. C. Ethridge and W. F. Kaukler. (ES75)

13. Report on Computing and Networking in the Space Science Laboratory by the SSL Computer Committee. NASA TM-108422, September 1993. D. L. Gallagher (Editor). (ES53)

14. Initial Development of a High-Pressure Crystal Growth Facility--Center Director's Discretionary Fund Final Report (Project No. 87-25). NASA TM-108430, November 1993. F. R. Szofran, S. L. Lehoczky, S. D. Cobb, and D. C. Gillies. (ES75)

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1. Acceleration Environment on the Space Shuttle and Its Impact. ASME Winter Annual Meeting, New Orleans, Louisiana, November 28-December 3, 1993. N. Ramachandran, Charles Baugher, and Melissa Rogers. (ES71)

2. Advanced Microwave Precipitation Radiometer (AMPR) Improved Calibration and Data Collection. SPIE's International Symposium on Optical Engineering and Photonics in Aerospace and Remote Sensing, Orlando, Florida, April 12-16, 1993. Mark W. James, Robbie E. Hood, and Roy W. Spencer. (ES43)

3. Assessment of the Area Time Integral (ATI) Technique for Rainfall Estimates Using Polarimetric Radar. Fourth International Conference on Precipitation, Iowa City, Iowa, April 24-28, 1993. R. Raghavan and V. Chandrasekar. (ES42)

4. Assessment of Systematic Effects on Angular Correlations in the BATSE Burst Location Data. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). G. N. Pendleton, M. S. Briggs, J. J. Brainerd, M. N. Brock, G. J. Fishman, C. A. Meegan, and J. Hakkila. (ES66)

5. Astronomical Observations with Normal Incidence Multilayer Optics III: Selection of Multilayer Bandpasses. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). A.B.C. Walker, Jr., R. B. Hoover, and T. W. Barbee, Jr. (ES52)

6. Atmospheric Electricity Research: Nocturnal Thunderstorms and Lightning Discharges as Seen from the NASA Space Shuttle. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. Otha H. Vaughan, Jr. (ES43)

7. Atmospheric Statistics for Aerospace Vehicle Operations. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. O. E. Smith and G. W. Batts. (ES44)

8. AXAF Status and Scientific Capability. '93 AAAS Meeting, Washington, D.C., February 12-13, 1993. Martin C. Weisskopf. (ES65)

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9. A Balloon-Borne Chromospheric Observatory. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). A.B.C. Walker, Jr. and R. B. Hoover. (ES52)

10. Basic and Advanced Fourier Telescope Performance for Hard X-Ray Imaging of the Sun. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). Jonathan Campbell. (ES65)

11. BATSE Discovery of GRO J1008-57. Conference on the Evolution of X-Ray Binaries, College Park, Maryland, October 11-13, 1993 (to appear in proceedings). R. B. Wilson, B. A. Harmon, G. J. Fishman, M. H. Finger, T. A. Prince, L. Bildsten, D. Chakrabarty, M. T. Stollberg, G. N. Pendleton, M. S. Briggs, B. Rubin, and S. N. Zhang. (ES66)

12. The BATSE Experiment on the Compton Gamma Ray Observatory. 30th Space Congress, Cocoa Beach, Florida, April 1993. Gerald J. Fishman. (ES66)

13. BATSE Images from Galactic Center Region. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). S. N. Zhang , G. J. Fishman, B. A. Harmon, W. S. Paciesas, B. C. Rubin, C. A. Meegan, R. B. Wilson, and M. H. Finger. (ES66)

14. BATSE Observations of Black Hole X-Ray Binaries. Workshop on the Multi-Wavelength Approach to Gamma-Ray Astronomy, Les Diablerets, Switzerland, February 2-5, 1993. W. S. Paciesas, B. A. Harmon, M. S. Briggs, M. H. Finger, G. J. Fishman, C. Kouveliotou, C. A. Meegan, G. N. Pendleton, B. C. Rubin, C. A. Wilson, and R. B. Wilson. (ES66)

15. BATSE Observations of GS 0834-430. Conference on the Evolution of X-Ray Binaries, College Park, Maryland, October 11-13, 1993 (to appear in proceedings). C. A. Wilson, B. A. Harmon, R. B. Wilson, G. J. Fishman, and M. H. Finger. (ES66)

16. BATSE Observations of GX 354-00. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). S. N. Zhang, B. A. Harmon, G. J. Fishman, W. S. Paciesas, B. C. Rubin, C. A. Meegan, R. B. Wilson, and M. H. Finger. (ES66)

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19. BATSE Observations of the Soft Gamma Repeater SGR 1806-20. Symposium Astronomical Institute "Anton Pannekoek," University of Amsterdam, The Netherlands, December 21, 1993. C. Kouveliotou. (ES66)

20. BATSE Observations of 3C273. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). W. S. Paciesas, R. S. Mallozzi, G. N. Pendleton, B. A. Harmon, C. A. Wilson, S. N. Zhang, J. C. Ling, R. T. Skelton, and W. A. Wheaton. (ES66)

21. Benzil: A Promising Third-Order Nonlinear Organic Material. 1993 Optical Society of America Meeting and Exhibition, Toronto, Canada, October 3-8, 1993. H. Abdeldayem, A. W. Shields, W. K. Witherow, B. G. Penn, and D. O. Frazier. (ES74)

22. Bulk Growth of II-VI Crystals in the Microgravity Environment of USML-1. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). D. C. Gillies, D. J. Larson, S. L. Lehoczky, F. R. Szofran, Yi-Gao Sha, Ching-Hua Su, and H. A. Alexander. (ES75)

23. Bulk Growth of II-VI Semiconducting Compounds. Gordon Research Conference, Henniker, New Hampshire, July 19-23, 1993. S. L. Lehoczky, F. R. Szofran, D. C. Gillies, S. D. Cobb, C.-H. Su, Y. G. Sha, and R. N. Andrews. (ES75)

24. Bulk Growth of II-VI Semiconducting Compounds. Third IUMRS International Conference on Advanced Materials, Tokyo, Japan, August 31-September 4, 1993 (to appear in proceedings). S. L. Lehoczky, F. R. Szofran, D. C. Gillies, S. D. Cobb, C.-H. Su, Y. G. Sha, and R. N. Andrews. (ES75)

Presentations (Continued)

25. Bulk Growth of II-VI Semiconducting Compounds. Ninth American Conference on Crystal Growth, Baltimore, Maryland, August 1-6, 1993. S. L. Lehoczky, F. R. Szofran, D. C. Gillies, S. D. Cobb, C.-H. Su, Y. G. Sha, and R. N. Andrews. (ES75)

26. The Burst and Transient Source Experiment. AIAA Space Programs and Technologies Conference, Huntsville, Alabama, September 21-23, 1993. C. A. Meegan. (ES66)

27. Channel to Energy Calibration Results for the BATSE Large-Area Detectors. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). G. N. Pendleton, W. S. Paciesas, M. S. Briggs, B. A. Harmon, C. A. Wilson, G. J. Fishman, R. B. Wilson, and C. A. Meegan. (ES66)

28. Characterization of Growth Defects in ZnTe Single Crystals. Spring Meeting of the Materials Research Society, San Francisco, California, April 12-16, 1993 (to appear in proceedings). W. Zhou, J. Wu, M. Dudley, C.-H. Su, M. P. Volz, D. C. Gillies, F. R. Szofran, and S. L. Lehoczky. (ES75)

29. Comparison of Clear-Sky Longwave Fluxes Computed from NMC, ECMWF and TOVS Global Data Sets: Impact of Inclusion of SSMI and MSU Data. 18th Climate Diagnostics Workshop, Boulder, Colorado, November 1-5, 1993. B. J. Sohn and F. R. Robertson. (ES42)

30. Comparison of FPS-16 Radar/Jimsphere and NASA's 50 MHz Radar Wind Profiler Turbulence Indicators. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. Michael Susko. (ES44)

31. Comparison of Remotely Measured Multispatial Scattering Parameters for Tropical Aerosols. Optical Remote Sensing of the Atmosphere Tropical Meeting, Salt Lake City, Utah, March 3-12, 1993. D. R. Cutten, E. W. McCaul, Jr., J. D. Spinhirne, R. T. Menzies, R. Pueschel, A. D. Clarke, and D. A. Bowdle. (ES43)

32. Comparison of Measured and Modeled Scattering Parameters for Tropospheric Aerosols. 12th Annual Meeting of the American Association for Aerosol Research, Oak Brook, Illinois, October 11-15, 1993. D. R. Cutten, R. Peuschel, J. Rothermel, A. D. Clarke, and D. A. Bowdle. (ES43)

Presentations (Continued)

33. A Comparison of Measured Thermospheric Densities and the Implications for Space Station Freedom. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. Michael P. Hickey, Bonnie F. James, B. Jeffrey Anderson, and Robert E. Smith. (ES44)

34. Composite Radar Data Analysis with Implications for Hydrometeorology and Climatology. 26th International Conference on Radar Meteorology, Norman, Oklahoma, May 24-28, 1993. R. Raghaven and S. J. Goodman. (ES42)

35. Composite Radar Data Analysis with Implications for Hydrometeorology. Fourth International Conference on Precipitation: Hydrological and Meteorological Aspects of Rainfall Measurement and Predictability, Iowa City, Iowa, April 26-28, 1993. R. Raghaven and S. J. Goodman. (ES42)

36. Compositional Distributions and Electrical Properties of $Hg_{1-x}Cd_xTe$ Grown by CVT. Ninth American Conference on Crystal Growth, Baltimore, Maryland, August 1-6, 1993. M. P. Volz, Yi-Gao Sha, and S. L. Lehoczky. (ES75)

37. The Compton Attenuation Model of Cosmological Gamma-Ray Bursts. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). J. J. Brainerd. (ES66)

38. Containerless Processing of $YBa_2Cu_3O_{7-\delta}$ Oxide Superconductors. 1993 TMS 122nd Annual Meeting, Denver, Colorado, February 21-25, 1993. W. H. Hofmeister, G. Carro, R. J. Bayuzick, J. McHugh, R. Hopkins, and Marcus Vlasse. (ES74)

39. Continuum Spectral Characteristics of Bursts Measured with the BATSE Large Area Detectors. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). G. N. Pendleton, W. S. Paciesas, M. S. Briggs, R. S. Mallozzi, T. M. Koshut, G. J. Fishman, and C. A. Meegan. (ES66)

40. Cosmic Ray Composition and Spectra: (1) Protons. 23rd International Cosmic Ray Conference, Calgary, Alberta, Canada, July 19-30, 1993 (to appear in proceedings). K. Asakimori, M. J. Christl, J. H. Derrickson, W. F. Fountain, T. A. Parnell, F. E. Roberts, J. W. Watts, et al. (ES64)

Presentations (Continued)

41. The Crystals by Vapor Transport Experiment (CVTE): Space Processing and Preliminary Results. 44th International Astronautics Congress of the International Astronautics Federation, Graz, Austria, October 16-22, 1993. R. T. Ruggeri, C.-H. Su, F. R. Szofran, et al. (ES75)

42. Degradation of Polymers Exposed to Low Earth Orbit Environment on the Long Duration Exposure Facility. Spring Meeting of the Materials Research Society, San Francisco, California, April 12-16, 1993. G. N. Raikar, J. C. Gregory, J. J. Weimer, P. R. Young, and P. N. Peters. (ES63)

43. Design of a Hydrogen Maser for Space and Progress on Cryogenic Hydrogen Maser Research. Seventh European Frequency and Time Forum, Neuchâtel, Switzerland, March 15-18, 1993 (to appear in proceedings). R.F.C. Vessot, E. M. Mattison, G. U. Nystrom, L. M. Coyle, R. L. Walsworth, and R. Decher. (ES61)

44. Detecting the Scale and Resolution Effects in Remote Sensing and GIS. Annual Meeting of the American Society for Photogrammetry and Remote Sensing, New Orleans, Louisiana, February 14-19, 1993. C. Cao, N. Lam, and D. Quattrochi. (ES42)

45. Detector Development for Hard X-Ray Astronomy. AIAA Space Programs and Technologies Conference, Huntsville, Alabama, September 21-23, 1993. K. L. Dietz, B. D. Ramsey, M. C. Weisskopf, and R. A. Austin. (ES65)

46. Development of a Hard X-Ray Imaging Polarimeter. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). Robert A. Austin, Takahisa Minamitani, and Brian D. Ramsey. (ES65)

47. Diffusional Growth of Succinonitrile-Rich Droplets on a 2-D Surface in a Succinonitrile-Water Miscibility-Gap Solution. Seventh Annual Alabama Materials Research Conference, Normal, Alabama, September 21-22, 1993. J. R. Rogers, J. P. Downey, W. K. Witherow, B. R. Facemire, and D. O. Frazier. (ES74)

48. Digital Image Techniques for Volume Change Measurements in Triaxial Tests. Techniques and Applications in Civil Engineering, Engineering Foundation/NSF Conference, Hawaii, February 28-March 5, 1993 (to appear in proceedings). E. J. Macari-Pasqualino, N. C. Costes, and J. K. Parker. (ES42)

Presentations (Continued)

49. Direct Electron Pairs Along Heavy Ion Tracks. 23rd International Cosmic Ray Conference, Calgary, Alberta, Canada, July 19-30, 1993 (to appear in proceedings). J. H. Derrickson, P. B. Eby, W. F. Fountain, T. A. Parnell, J. W. Watts, K. H. Moon, et al. (ES64)

50. Direct Electron Pairs Along Heavy Ion Tracks. Korean Physical Society Meeting, Taigu, Korea, October 23-24, 1993. J. H. Derrickson, P. B. Eby, W. F. Fountain, T. A. Parnell, J. W. Watts, K. H. Moon, et al. (ES64)

51. Effects of Thermal-Solutal Convection on Temperature and Solutal Fields in Unidirectional Bridgman Solidified Semiconductors. Seventh Annual Alabama Materials Research Conference, Normal, Alabama, September 21-22, 1993. J.-C. Wang, D. Watring, S. L. Lehoczky, and F. R. Szofran. (ES75)

52. Electric Current Systems in Solar Active Regions. Sac Peak Summer Workshop, Sacramento Peak, New Mexico, August 31-September 3, 1993 (to appear in proceedings). G. A. Gary and P. Démoulin. (ES52)

53. Electrophoresis in Space - Why is it Important? International Council of Electrophoresis Societies Conference, Sandefjord, Norway, June 2-4, 1993. Robert S. Snyder and Percy H. Rhodes. (ES71)

54. An Evaluation of BATSE Burst Locations Computed with MAXCB Datatype. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). T. M. Koshut, W. S. Paciesas, G. N. Pendleton, and M. N. Brock. (ES66)

55. Evolution of Massive Stars to Explosion. Conference on Evolution of Massive Stars, Brussels, Belgium, October 1993 (to appear in proceedings). J. C. Wheeler and D. A. Swartz. (ES65)

56. Experiments in Microgravity. International Aerospace Symposium, Nagoya, Japan, January 1-3, 1993. Fred W. Leslie and Timothy L. Miller. (ES42)

57. Fabrication and Test of a Wide-Field H-Lyman α Coronagraph Instrument. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). R. B. Hoover, A.B.C. Walker, Jr., S. Fineschi, P. C. Baker, J. Kim, and M. Zukic. (ES52)

Presentations (Continued)

58. Fabrication of the Water Window Imaging X-Ray Microscope. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). R. B. Hoover, D. L. Shealy, D. Gore, A.B.C. Walker, Jr., P. C. Baker, and T. W. Barbee, Jr. (ES52)

59. The First Tethered Satellite System Mission: An Assessment. Seventh Scientific Assembly of the IAGA, Buenos Aires, Argentina, July 12-23, 1993. M. Candidi, M. Dobrowolny, and N. H. Stone. (ES53)

60. Gamma-Ray Bursts: Observational Overview. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). Gerald J. Fishman. (ES66)

61. The GLObal Backscatter Experiment (GLOBE): Database, Analysis, and Applications. Seventh Coherent Laser Radar Conference, Paris, France, July 19-23, 1993. D. A. Bowdle, D. R. Cutten, E. McCaul, and V. Srivastava. (ES43)

62. The Global Hydrologic Cycle as Simulated by the GENESIS Climate Model: Intercomparisons with Multiple Climate Data Bases. American Meteorological Society Annual Meeting, Anaheim, California, January 17-22, 1993. Franklin R. Robertson, Eric Barron, Steve Goodman, Dan Fitzjarrald, B. Bishop, John Christy, Starley Thompson, and D. Pollard. (ES42)

63. Growth of HgZnTe in Microgravity by Directional Solidification II. Flight Experiment. International Symposium on Microgravity Science and Applications, Beijing, China, May 10-12, 1993. S. L. Lehoczky, C.-H. Su, F. R. Szofran, D. C. Gillies, and Y.-G. Sha. (ES75)

64. Growth of HgZnTe in Microgravity by Directional Solidification I. Ground-Based Research. International Symposium on Microgravity Science and Applications, Beijing, China, May 10-12, 1993. S. L. Lehoczky, C.-H. Su, F. R. Szofran, D. C. Gillies, Y.-G. Sha, and R. N. Andrews. (ES75)

65. Helium-Like Iron Line Diagnostics in Clusters of Galaxies. Fourth Texas-Mexico Conference on Astrophysics, Austin, Texas, March 1993 (to appear in proceedings). D. A. Swartz and M. E. Sulkanen. (ES65)

Presentations (Continued)

66. A Hybrid Gas Detector/Phoswich for Hard X-Ray Astronomy. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). B. D. Ramsey, R. A. Austin, T. Minimatani, and M. C. Weisskopf. (ES65)

67. Hydrologic Field Instrumentation for a Small-Scale Experiment with Implications for Rain-Induced Slope Stability Analyses. First Brazilian Conference on Slope Stability, First COBRAE, Rio de Janeiro, Brazil, May 3-5, 1993 (to appear in proceedings). E. J. Macari, C. A. Laymon, and N. C. Costes. (ES42)

68. Imaging of the Terrestrial Aurora in the Vacuum Ultraviolet. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993. M. R. Torr and D. G. Torr. (ES51)

69. Impact of Complex Land Surface Hydrology on the Development and Evolution of Mid-Latitude Synoptic Waves: Sensitivity Experiments. Conference on Hydroclimatology, Anaheim, California, January 17-22, 1993. Jorge A. Ramirez and S.-H. Chou. (ES42)

70. Implementation of Ionizing Radiation Environment Requirements for Space Station. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. John W. Watts and Paul A. Boeder. (ES64)

71. Improvement in Ocean Surface Radiation Budget Accuracy: Clear Sky Flux Estimation Constrained by SSMI Precipitable Water and MSU Brightness Temperature. IAMAP-IAHS Joint Symposium, Yokahama, Japan, July 11-23, 1993. B.-J. Sohn. (ES42)

72. Inference of Lightning Changes Based on a Multipole Expansion Model. AMS 17th Conference on Severe Local Storms/Conference on Atmospheric Electricity, St. Louis, Missouri, October 4-8, 1993. William J. Koshak and E. P. Krider. (ES43)

73. The Inner Magnetosphere Imager Mission. Yosemite '93 Solar System Plasma Physics Resolution of Processes in Space and Time, Yosemite, California, February 2-5, 1993 (to appear in proceedings). Dennis L. Gallagher. (ES53)

Presentations (Continued)

74. An Instrument to Measure the Energy Spectra of Cosmic Rays from 20 to 1000 GeV per Nucleon. AIAA Space Programs and Technologies Conference, Huntsville, Alabama, September 21-23, 1993. J. Derrickson, T. Parnell, R. Austin, J. Watts, J. Gregory, A. Smith, P. Fowler, M. Masheder, and C. Thoburn. (ES64)

75. An Intercomparison of the Navy Cal/Val and SSM/I Pathfinder Precipitation Algorithms. Shared Processing Network SSM/I Algorithm Symposium, Monterey, California, June 8-10, 1993. Steven J. Goodman, Frank J. LaFontaine, George J. Huffman, and Robert F. Adler. (ES42)

76. Investigating the Relation Between Precipitation and Lightning Using Polarimeter Radar Observations. 26th International Conference on Radar Meteorology, Norman, Oklahoma, May 24-28, 1993. S. J. Goodman and R. Raghaven. (ES42)

77. Investigation of Nucleating Lysozyme Solutions. Fifth International Conference on the Crystallization of Biological Macromolecules, San Diego, California, August 8-13, 1993 (to appear in proceedings). Laurent Sibille and Marc Pusey. (ES76)

78. Ionosphere as Source of Magnetospheric Plasma. Seventh Scientific Assembly of the IAGA, Buenos Aires, Argentina, August 8-20, 1993. T. E. Moore, D. C. Delcourt, B. L. Giles, and C. J. Pollock. (ES53)

79. Large Scale Structure of Magnetospheric Plasma. Seventh Scientific Assembly of the IAGA, Buenos Aires, Argentina, August 8-20, 1993. T. E. Moore and D. C. Delcourt. (ES53)

80. Lasing and Fluorescence from BIS-MSB-Dye-Doped Polystyrene Microspheres. 1993 Optical Society of America Meeting and Exhibition, Toronto, Canada, October 3-8, 1993. W. Sheng, K. X. He, P. Venkateswarlu, A. Sharma, J. W. Vanderhoff, J.-H. Chen, D. Kornfeld, B. G. Penn, D. O. Frazier, W. K. Witherow. (ES74)

81. Macroscale Structure of Moisture, Cloud, and Precipitation Deduced from Combined SSM/I Retrievals and Global Gridded Analyses. IAMAP/IAHS Joint Symposium, Yokahama, Japan, July 11-23, 1993. F. R. Robertson. (ES42)

Presentations (Continued)

82. Mars Global Reference Atmosphere Model (MARS-GRAM): Release 2. Overview and Applications. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. B. F. James, D. L. Johnson, and L. W. Tyree. (ES44)

83. The Marshall Space Flight Center Imaging X-Ray Experiment (MIXE). 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). B. D. Ramsey, J. A. Apple, K. L. Dietz, M. C. Weisskopf, R. A. Austin, J. Kolodziejczak, and T. Minamitani. (ES65)

84. A Maskless Gamma-Ray All-Sky Imager: BATSE/CGRO. IEEE 1993 Nuclear Science Symposium, San Francisco, California, October 30-November 6, 1993 (to appear in proceedings). S. N. Zhang, G. J. Fishman, B. A. Harmon, W. S. Paciesas, C. A. Meegan, R. B. Wilson, M. H. Finger, and B. C. Rubin. (ES66)

85. Measurement of Composition, Energy Spectra and Nuclear Interaction of Cosmic Rays Above 1 TeV/amu Using Nuclear Emulsion Chambers. Korean Physical Society Meeting, Taigu, Korea, October 23-24, 1993. K. Asakimori, M. J. Christl, J. H. Derrickson, W. F. Fountain, K. H. Moon, T. A. Parnell, F. E. Roberts, J. W. Watts, et al. (ES64)

86. Measurement of the Optical Properties of Thin Films of Silver and Silver Oxide. Third LDEF Post-Retrieval Symposium, Williamsburg, Virginia, November 8-12, 1993. P. N. Peters, Y. Brown, J. C. Gregory, and Pallob Nag. (ES63)

87. Mechanisms for Initiating and Sustaining Hydrologic Cycle Anomalies in a Climate Model. IAMAP/IAHS Joint Symposium, Yokahama, Japan, July 11-23, 1993. F. R. Robertson, D. E. Fitzjarrald, E. Barron, S. J. Goodman, J. R. Christy, S. Thompson, and D. Pollard. (ES42)

88. Microflaring at the Feet of Large Active Region Loops. National Astronomical Observatory Meeting, Kofu, Japan, September 5-10, 1993 (to appear in proceedings). J. Porter, R. Moore, G. Roumeliotis, T. Shimizu, S. Tsuneta, P. Sturrock, and L. Acton. (ES52)

89. Microstrip Detector Development for X-Ray Astronomy. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). M. A. Fulton, B. D. Ramsey, and J. J. Kolodziejczak. (ES65)

Presentations (Continued)

90. Mixed Dimensional Coarsening of 3-D Droplets by 2-D Diffusion. 1993 Fall Meeting of the Materials Research Society, Boston, Massachusetts, November 29-December 3, 1993. V. Fradkov, S. Mani, M. Glicksman, D. O. Frazier, W. K. Witherow, B. R. Facemire, J. P. Downey, and J. R. Rogers. (ES74)

91. Modeling the Gamma-Ray Background on BATSE. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). B. C. Rubin, B. A. Harmon, M. H. Finger, C. A. Meegan, G. J. Fishman, R. B. Wilson, W. S. Paciesas, J. Chiu, T. A. Prince, and J. C. Ling. (ES66)

92. Molecular Design of Non-Linear Optical Properties and Synthesis of Organic Molecules. Science and Technology Alliance Materials Conference '93, Greensboro, North Carolina, October 27-29, 1993. R. D. Clark, B. Penn, B. Cardelino, C. Moore, Li Tan, A. Martinez, E. Romero, J. Ballard, and M. Sanghadasa. (ES74)

93. Morphological Study of Short Gamma Ray Bursts. 23rd International Cosmic Ray Conference, Calgary, Alberta, Canada, July 19-30, 1993 (to appear in proceedings). P. N. Bhat, G. J. Fishman, C. A. Meegan, R. B. Wilson, and W. S. Paciesas. (ES66)

94. Morphological Study of Short Gamma Ray Bursts. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). P. N. Bhat, G. J. Fishman, C. A. Meegan, R. B. Wilson, and W. S. Paciesas. (ES66)

95. Multi-Center Airborne Coherent Atmospheric Wind Sensor. Optical Remote Sensing of the Atmosphere, Sixth Topical Meeting, Salt Lake City, Utah, March 8-12, 1993. J. Rothermel, R. M. Hardesty, and R. T. Menzies. (ES43)

96. Multiple Solutions in a Rotating Annulus Flow Model. Ninth Conference on Atmospheric and Oceanic Waves and Stability 1993. T. L. Miller, H.-I. Lu, and K. A. Butler. (ES42)

97. The Multi-Spectral Solar Telescope Array II. Results of the Second Flight. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). A.B.C. Walker, Jr., R. B. Hoover, and T. W. Barbee, Jr. (ES52)

Presentations (Continued)

98. NASA Shuttle Lightning Research: Observations of Nocturnal Thunderstorms and Lightning Displays as Seen During Recent Space Shuttle Missions. AMS 17th Conference on Severe Local Storms/ Conference on Atmospheric Electricity, St. Louis, Missouri, October 4-8, 1993. Otha H. Vaughan, Jr. (ES43)

99. NASP Natural Environment Support--National Environment Applications for NASP/X-30 Design and Mission Planning. 1993 NASP Technology Review, Monterey, California, April 13-16, 1993. Dale L. Johnson. (ES44)

100. Natural Environment Applications for NASP/X-30 Design and Mission Planning. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. D. L. Johnson, C. K. Hill, G. W. Batts, and S. C. Brown. (ES44)

101. Natural Environment Requirements Definition and Significance for Aerospace Plane Development. Fifth AIAA International Aerospace Planes and Technology Conference, Munich, Germany, November 30-December 3, 1993. Dale L. Johnson, C. Kelly Hill, William W. Vaughan, S. Clark Brown, and G. Wade Batts. (ES44)

102. The Nearest Neighbors of BATSE Gamma-Ray Bursts: Traps. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). J. J. Brainerd. (ES66)

103. New Phenomenon of Spatial Light Modulation in Benzil. Spatial Light Modulators and Applications, Palm Springs, CA, March 15-17, 1993. H. Abdeldayem, W. Witherow, A. Shields, and D. Frazier. (ES74)

104. New Supports for Partition Column Chromatography. Eighth International Conference on Partitioning in Aqueous Two-Phase Systems, Leipziz, Germany, August 22-27, 1993. T. Rosenberger, R. C. Cronise, and J. M. Van Alstine. (ES76)

105. Nonlinear Optical Properties and Determination of Monolayer Molecular Orientation of Langmuir-Blodgett Films by Using Second-Harmonic Generation. 1993 Optical Society of America Meeting and Exhibition, Toronto, Canada, October 3-8, 1993. R. Srinivasan, K. X. He, A. Sharma, P. Venkateswarlu, H. W. Hyde, B. G. Penn, and D. O. Frazier. (ES74)

Presentations (Continued)

106. Nonlinear Phenomenon of Beam Fanning in Organic Solutions and Thin Films. 1993 Optical Society of America Meeting and Exhibition, Toronto, Canada, October 3-8, 1993. H. Abdeldayem, W. K. Witherow, A. W. Shields, B. G. Penn, and D. O. Frazier. (ES74)

107. Numerical Simulations for Geophysical Fluid Flow Experiments. First Pacific International Conference on Aerospace Science and Technology, Tainan, Taiwan, December 6-9, 1993. Huei-Iin Lu, T. L. Miller, F. W. Leslie, and K. A. Butler. (ES42)

108. Observation of Hard X-Ray Transients with BATSE. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). B. A. Harmon. (ES66)

109. Observations of Accreting Pulsars. Conference on the Evolution of X-Ray Binaries, College Park, Maryland, October 11-13, 1993 (to appear in proceedings). T. A. Prince, R. B. Wilson, M. H. Finger, et al. (ES66)

110. Observations on Effects of Temperature and Precipitant Concentration on Lysozyme Face Growth Rates. Protein Crystal Growth in Microgravity Conference, Panama City Beach, Florida, April 23-26, 1993. E. Forsythe and M. Pusey. (ES76)

111. Observations of Enhanced Coronal Heating in Sheared Magnetic Fields. National Astronomical Observatory Meeting, Kofu, Japan, September 5-10, 1993 (to appear in proceedings). R. Moore, J. Porter, et al. (ES52)

112. Orthorhombic Lysozyme Solubility. Fifth International Conference on the Crystallization of Biological Macromolecules, San Diego, California, August 8-13, 1993 (to appear in proceedings). Felecia Ewing, Elizabeth Forsythe, and Marc Pusey. (ES76)

113. An Overview and Status of the TSS-1 Mission. AIAA Space Operations and Space Systems Sections, Huntsville, Alabama, September 24, 1993. Nobie H. Stone. (ES53)

114. Overview of US Material Science and Fluid Science Instrumentation. 1983-1993: Spacelab. 10 Years Experience in Manned Space Activities, Florence, Italy, October 12-14, 1993. W. B. Twichell, P. N. Galloway, and G. H. Fichtl. (ES01)

Presentations (Continued)

115. P-, L-, and C-Band Polarimetric Radar Measurements of Coastal Zones Forest and Other Surface Covers. 1993 International Geoscience and Remote Sensing Symposium, Tokyo, Japan, August 18-21, 1993 (to appear in proceedings). S. S.-T. Wu. (ES43)

116. Performance of the Multilayer Coated Mirrors for the Multi Spectral Solar Telescope Array. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). A.B.C. Walker, Jr., M. J. Allen, T. D. Willis, R. B. Hoover, and T. W. Barbee, Jr. (ES52)

117. Photoluminescence of Vapor and Solution Grown ZnTe Single Crystals. Sixth International Conference on II-VI Compounds and Related Optoelectronic Materials, Newport, Rhode Island, September 13-17, 1993. Y. Biao, C.-H. Su, M. P. Volz, F. R. Szofran, D. C. Gillies, et al. (ES75)

118. Polarimetric Radar Modeling of Precipitation at K_a-Band. 26th International Conference on Radar Meteorology, Norman, Oklahoma, May 24-28, 1993. J. Vivekanandan and R. Raghaven. (ES42)

119. Polarimetric Radar Observations from a Vertically Pointing Radar and Their Significance to Spaceborne Radar Measurements. 26th International Conference on Radar Meteorology, Norman, Oklahoma, May 24-28, 1993. R. Raghavan, V. Chandrasekar, and I. J. Caylor. (ES42)

120. Polarimetry of the HI Lyman α for Diagnostics of Coronal Magnetic Fields. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). S. Fineschi, R. B. Hoover, M. Zukic, J. Kim, A.B.C. Walker, Jr., and P. C. Baker. (ES52)

121. Polydiacetylenes: Excellent Candidates as Nonlinear Optical Materials. 1993 Optical Society of America Meeting and Exhibition, Toronto, Canada, October 3-8, 1993. H. Abdeldayem, M. S. Paley, D. O. Frazier, and S. P. McManus. (ES74)

122. Prediction of Nonlinear Optical Properties of Organic Materials. American Chemical Society Meeting, Johnson City, Tennessee, October 16-20, 1993. B. Cardelino and C. E. Moore. (ES74)

Presentations (Continued)

123. A Preliminary Report on AMPR Measurements of Tropical Rainfalls. 1993 International Geoscience and Remote Sensing Symposium, Tokyo, Japan, August 18-21, 1993 (to appear in proceedings). S. S.-T. Wu, R. Spencer, and R. Hood. (ES43)

124. Preparation of 4-Nitroanilines Containing Heterocyclic Amines. Science and Technology Alliance Materials Conference '93, Greensboro, North Carolina, October 27-29, 1993. S. Gurule-Leyba, J. Collins, M. Mascarenas, B. Penn, and R. D. Clark. (ES74)

125. Preparation of N-(4-Nitrophenyl)-N-methylaminoacetonitrile (DAN) Derivatives. Science and Technology Alliance Materials Conference '93, Greensboro, North Carolina, October 27-29, 1993. E. Romero, B. Penn, and R. D. Clark. (ES74)

126. Properties of Gamma-Ray Burst Precursor Activity as Observed by BATSE. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). T. M. Koshut, C. Kouveliotou, W. S. Paciesas, G. N. Pendleton, M. S. Briggs, and R. D. Preece. (ES66)

127. Quasi-Periodic Oscillations of Black-Hole Candidates Observed with BATSE. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). C. Kouveliotou. (ES66)

128. Recent Observations of EXO 2030+375 with BATSE. Conference on the Evolution of X-Ray Binaries, College Park, Maryland, October 11-13, 1993. M. T. Stollberg, W. S. Paciesas, M. H. Finger, G. J. Fishman, R. B. Wilson, C. A. Meegan, B. A. Harmon, and C. A. Wilson-Hodge. (ES66)

129. The Relation of Satellite Potential to Ambient Plasma Density from Observations by the GEOS-2 and DE-1 Spacecraft. Dusty Plasma Workshop, Huntsville, Alabama, March 22-24, 1993. R. H. Comfort, P. D. Craven, D. L. Gallagher, R. L. West, and C. R. Chappell. (ES53)

130. Relationships Between Lidar Backscatter and Meteorological Fields. Sixth Topical Meeting on Optical Remote Sensing of the Atmosphere, Salt Lake City, Utah, March 1993 (to appear in Technical Digest). E. W. McCaul, Jr., D. A. Bowdle, D. R. Cutten, R. T. Menzies, and J. D. Spinhirne. (ES43)

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131. Repolished S-056 Grazing Incidence Mirror Performance in the MSFC AXAF Test Facility. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). J. W. Campbell, R. B. Hoover, and P. C. Baker. (ES65)

132. Retrieval of Storm Microphysics Using K_a-Band Radar Observations. International Geoscience and Remote Sensing Symposium, Tokyo, Japan, August 18-21, 1993. J. Vivekanandan and R. Raghavan. (ES42)

133. ROSAT Observation of the Eclipsing AM Her System WW Hor. Israel Physics Society Meeting, Jerusalem, Israel, January 1993 (to appear in proceedings). A. F. Tennant, K. Wu, and D. T. Wickramasinghe. (ES65)

134. SCIN/MAGIC on Balloons: Progress and Status. 23rd International Cosmic Ray Conference, Calgary, Alberta, Canada, July 19-30, 1993 (to appear in proceedings). K. Asakimori, M. J. Christl, J. H. Derrickson, W. F. Fountain, T. A. Parnell, F. E. Roberts, J. W. Watts, et al. (ES64).

135. A Search for Extra-Galactic Source Emission Using the Earth Occultation Technique. Second Compton Observatory Symposium, College Park, Maryland, September 20-22, 1993 (to appear in proceedings). R. S. Mallozzi, W. S. Paciesas, G. N. Pendleton, B. A. Harmon, C. A. Wilson, and S. N. Zhang. (ES66)

136. A Search for Sunspot Canopies Using a Vector Magnetograph. Eighth Cambridge Meeting on Cool Stars, Stellar Systems, and the Sun, Athens, Georgia, October 11-14, 1993 (to appear in proceedings). M. Adams, S. K. Solanki, M. J. Hagyard, and R. L. Moore. (ES52)

137. Single Particle Calibration of Continuous Wave Doppler Lidars. 12th Annual Meeting of the American Association for Aerosol Research, Oak Brook, Illinois, October 11-15, 1993. M. A. Jarzembski and V. Srivastava. (ES43).

138. The Solar Vector Magnetograph: A Candidate Instrument for a Lunar Solar Observatory. SPIE's International Symposium on Optical Engineering and Photonics in Aerospace and Remote Sensing, Orlando, Florida, April 12-16, 1993 (to appear in proceedings). C. Thyen and M. Adams. (ES52)

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139. The Solar X-Ray Imager for the Geostationary Operational Environmental Satellite (GOES). AIAA Space Programs and Technologies Conference, Huntsville, Alabama, September 21-23, 1993 (to appear in proceedings). J. Davis, et al. (ES52)

140. The Spacelab IML Mission. CEAS European Forum, Florence, Italy, October 12-14, 1993. Robert S. Snyder and Teresa Y. Miller. (ES71)

141. Spectral Breaks from Two High-Energy GRBs as Seen in the BATSE Large Area Detectors. 23rd International Cosmic Ray Conference, Calgary, Alberta, Canada, July 19-30, 1993 (to appear in proceedings). R. D. Preece, C. Kouveliotou, M. N. Brock, M. S. Briggs, and G. N. Pendleton. (ES66)

142. Spectral Evolution of a Sub-Class of Gamma Ray Bursts. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). P. N. Bhat, G. J. Fishman, C. A. Meegan, R. B. Wilson, C. Kouveliotou, and W. S. Paciesas. (ES66)

143. A Statistical Approach to Understanding Nucleation Phenomena. International Workshop on Undercooled Metallic Melts: Properties, Solidification, and Metastable Phases, Ciocco, Italy, June 6-11, 1993. W. H. Hofmeister, C. W. Morton, R. J. Bayuzick, and M. B. Robinson. (ES75)

144. Status of the Stellar X-Ray Polarimeter for the Spectrum-X-Gamma Mission. 1993 SPIE Symposium on Optical Instrumentation and Applied Science, San Diego, California, July 11-16, 1993 (to appear in proceedings). P. Kaaret, M. C. Weisskopf, R. F. Elsner, B. Ramsey, et al. (ES65)

145. Structure of FAB Fragment of 3D6 Monoclonal Antibody IgG and Its Binding to a Fragment of GP-41 of HIV Virus Type I. 16th International Conference on IUCr, Beijing, China, August 21-29, 1993. Joseph X. Ho, F. Ruker, K. Keeling, and D. C. Carter. (ES76)

146. Structures, Chemistry, and Microgravity Results of Human Serum Albumin. Protein Crystal Growth in Microgravity Conference, Panama City Beach, Florida, April 23-26, 1993. Daniel C. Carter. (ES76)

147. A Study of Continuum Spectra of Short-Duration Gamma-Ray Bursts Observed by BATSE. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). T. M. Koshut, G. N. Pendleton, W. S. Paciesas, M. S. Briggs, and R. D. Preece. (ES66)

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148. A Study of Diffusional Growth in a Liquid-Liquid Miscibility-Gap System Using Holographic Techniques. Gordon Research Conference, Henniker, New Hampshire, July 19-23, 1993. J. Rogers, J. Downey, W. Witherow, B. Facemire, D. Frazier, V. Fradkov, S. Mani, and M. Glicksman. (ES74)

149. A Study of Diffusional Growth in a Liquid-Liquid Miscibility-Gap System Using Holographic Techniques. 45th Southeast Regional Meeting of the American Chemical Society, Johnson City, Tennessee, October 17-20, 1993. J. Rogers, J. Downey, W. Witherow, B. Facemire, and D. Frazier. (ES74)

150. A Study of the Energy Flux of Gamma-Ray Bursts. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). R. S. Mallozzi, G. N. Pendleton, W. S. Paciesas, and M. S. Briggs. (ES66)

151. Study of the Evolution in Structures of Coronal Loops on the Basis of the 1991 June 7-11 Active Region (AR 6659) by Using Non-Linear Force-Free Model. IAU Colloquium No. 144, Tatranska Lomnia, Czechoslovakia, September 20-24, 1993. S. T. Wu, F. S. Weng, M. J. Hagyard, and G. A. Gary. (ES52)

152. The Super-JACEE Experiments. AIAA Space Programs and Technologies Conference, Huntsville, Alabama, September 21-23, 1993. T. A. Parnell, et al. (ES64)

153. Synthesis of N-Alkyl Substituted 4-Nitroaniline Derivatives for Non-Linear Optics. Science and Technology Alliance Materials Conference '93, Greensboro, North Carolina, October 27-29, 1993. A. Martinez, B. Penn, and R. D. Clark. (ES74)

154. Technology Needs for Geostationary Remote Sensors. SPIE's International Symposium on Optical Engineering and Photonics in Aerospace and Remote Sensing, Orlando, Florida, April 12-16, 1993 (to appear in proceedings). Ronald J. Koczor. (ES41)

155. The Termination Shock and the Heliosheath. Conference on Cosmic Winds and the Heliosphere, Tucson, Arizona, October 18-22, 1993 (to appear in proceedings). S. Suess and S. Nerney. (ES52)

Presentations (Continued)

156. Tetragonal Lysozyme Face Growth Rates - Revisited. Fifth International Conference on Crystallization of Biological Macromolecules, San Diego, California, August 8-13, 1993 (to appear in proceedings). E. Forsythe and M. L. Pusey. (ES76)

157. Tide-Like Wind Variations in the Lower Stratosphere. Upper Atmospheric Research Satellite Dynamics Meeting, Port Jefferson, New York, October 19-22, 1993. Steven A. Smith. (ES42)

158. Thermal Energy and Surface Composition Using TIMS Data. ACSM/ASPRS Annual Meeting, New Orleans, Louisiana, April 14-17, 1993. Dale A. Quattrochi. (ES42)

159. Third-Order Nonlinear Susceptibility Measurements by Degenerate Four-Wave Mixing of Benzil in Acetone Using Pulsed Nd-YAG Laser. 1993 Optical Society of America Meeting and Exhibition, Toronto, Canada, October 3-8, 1993. H. A. Abdeldayem, A. W. Shields, and D. O. Frazier. (ES74)

160. TIMS Data for Measurement of Thermal Responses Over Mountain Desert Terrain. Workshop on Thermal Remote Sensing of the Energy and Water Balance Over Vegetation in Conjunction with Other Sensors, La Londe Les Maures, France, September 20-25, 1993. Dale A. Quattrochi. (ES42)

161. Two Classes of Gamma-Ray Bursts. Gamma Ray Burst Workshop, Huntsville, Alabama, October 20-22, 1993 (to appear in proceedings). C. Kouveliotou, C. A. Meegan, G. J. Fishman, N. P. Bhat, M. S. Briggs, T. M. Koshut, W. S. Paciesas, and G. N. Pendleton. (ES66)

162. The Ultraviolet Imager. University of Arkansas Physics Department Colloquium, Fayetteville, Arkansas, November 19, 1993. James F. Spann. (ES55)

163. The Use of an Aircraft-Based Thermal Infrared Multispectral Scanner (TIMS) Data to Measure Surface Energy Budgets on a Landscape Scale. Workshop on Thermal Remote Sensing of the Energy and Water Balance Over Vegetation in Conjunction with Other Sensors, La Londe Les Maures, France, September 20-25, 1993. Jeffrey C. Luvall. (ES42)

164. The Use of Fractal Dimension in the Analysis of Sunspot Magnetic Fields. Southeastern Simulation Conference, Huntsville, Alabama, October 18-19, 1993. M. L. Adams and Z. E. Musielak. (ES52)

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165. Use of Thermal Infrared Multispectral Scanner (TIMS) Data for Analysis of Urban Landscape and Vegetation Responses. Workshop on Thermal Remote Sensing of the Energy and Water Balance Over Vegetation in Conjunction with Other Sensors, La Londe Les Maures, France, September 20-25, 1993. Dale A. Quattrochi. (ES42)

166. Wavenumber Selection and Hysteresis in Unstable Baroclinic Flows. Ninth Conference on Atmospheric and Oceanic Waves and Stability, San Antonio, Texas, May 10-14, 1993. Shih-Hung Chou. (ES42)

167. Why Do We Want to Grow Crystals in Reduced Gravity? Is There Another Way? 1992/93 Arkansas State University, Department of Engineering Lecture Series, Jonesboro, Arkansas, March 11, 1993. Frank R. Szofran. (ES75)

168. A Wind Model for Launch Vehicle Design. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. S. I. Adelfang, O. E. Smith, and G. W. Batts. (ES44)

169. Wind Persistence from 2-18 km Using a Wind Profiler. AIAA 31st Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1993. Timothy L. Wilfong, Robert L. Creasey, and Steve Smith. (ES42)

170. X-Ray Testing of the AXAF-S Prototype Replicated Optic. AIAA Space Programs and Technologies Conference, Huntsville, Alabama, September 21-23, 1993 (to appear in proceedings). J. J. Kolodziejczak, J. W. Campbell, R. F. Elsner, S. Fair, M. Joy, S. L. O'Dell, B. D. Ramsey, A. F. Tennant, M. C. Weisskopf, et al. (ES65)

APPENDIX: SSL PREPRINTS

1. Spectra of Low-Mass Helium Star Models and the Type Ic SN 1987M. No. 93-101, January 1993, to appear in The Astrophysical Journal. Douglas A. Swartz, Alexei V. Filippenko, Ken'ichi Nomoto, and J. Craig Wheeler. (ES65)

2. Galaxies in the Infrared. No. 93-102, February 1993, to appear in Infrared Astronomy (Cambridge University Press). Charles M. Telesco. (ES63)

3. The Signature of the Cosmological Redshift in Population Studies of Gamma-Ray Burst Spectra. No. 93-103, February 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) J. J. Brainerd. (ES65)

4. The Stellar Velocity Dispersion in the Nucleus of M82. No. 93-104, February 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) N. I. Gaffney, D. F. Lester, and C. M. Telesco. (ES63)

5. The Genesis of Starbursts and Infrared Emission in the Centers of Galaxies. No. 93-105, March 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) C. M. Telesco, L. L. Dressel, and R. D. Wolstencroft. (ES63)

6. The Shape of the Sunspot Cycle. No. 93-106, April 1993, submitted to Solar Physics. David H. Hathaway, Robert M. Wilson, and Edwin J. Reichmann. (ES52)

7. A Simulation Atlas of Tidal Features in Galaxies. No. 93-107, April 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) S. Howard, W. C. Keel, G. Byrd, and J. Burkey. (ES66)

8. Helium-Like Iron Line Temperature Diagnostics in Clusters of Galaxies. No. 93-108, May 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) Douglas A. Swartz and Martin E. Sulkanen. (ES65)

9. Dissipation of MHD Turbulence in Solar Flares: Energization of Hard X-Ray Producing Electrons by Fermi Acceleration. No. 93-109, May 1993, submitted to The Astrophysical Journal Letters. T. N. LaRosa, S. N. Shore, and R. L. Moore. (ES52)

10. Charge Transfer in Helium-Rich Supernova Plasma. No. 93-110, September 1993, submitted to The Astrophysical Journal. D. A. Swartz. (ES65)

SSL Preprints (Continued)

11. The Silicates in the Disk of β Pictoris. No. 93-111, July 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) R. F. Knacke, S. B. Fajardo-Acosta, C. M. Telesco, J. A. Hackwell, D. K. Lynch, and R. W. Russell. (ES63)

12. Basic and Advanced Fourier Telescope Performance for Imaging the Sky in Hard X-Rays. No. 93-112, July 1993, to appear in EUV, X-Ray, and Gamma-Ray Instrumentation for Astronomy IV (proceedings, SPIE Symposium on Optical Instrumentation and Applied Science, held San Diego, California, July 11-16, 1993). Jonathan Campbell. (ES65)

13. Performance of the Repolished S-056 Grazing Incidence Mirror in the MSFC AXAF Test Facility. No. 93-113, July 1993, to appear in Multilayer and Grazing Incidence X-Ray/EUV Optics II (proceedings, SPIE Symposium on Optical Instrumentation and Applied Science, held San Diego, California, July 11-16, 1993). Jonathan Campbell, Richard B. Hoover, and P. C. Baker. (ES65)

14. Statistical Survey of Pitch Angle Distributions in Core (0-50 eV) Ions from Dynamics Explorer 1: Outflow in the Auroral Zone, Polar Cap, and Cusp. No. 93-114, July 1993, submitted to Journal of Geophysical Research. B. L. Giles, C. R. Chappell, T. E. Moore, R. H. Comfort, and J. H. Waite, Jr. (ES53)

15. Status of the Stellar X-Ray Polarimeter for the Spectrum-X-Gamma Mission. No. 93-115, July 1993, to appear in X-Ray and Ultraviolet Polarimetry (proceedings 1993 SPIE Symposium on Optical Instrumentation and Applied Science, held San Diego, California, July 11-16, 1993). P. Kaaret, M. C. Weisskopf, R. F. Elsner, B. Ramsey, et al. (ES65)

16. Microstrip Detector Development for X-Ray Astronomy. No. 93-116, August 1993, to appear in EUV, X-Ray, and Gamma-Ray Instrumentation for Astronomy IV (proceedings, SPIE Symposium on Optical Instrumentation and Applied Science, held San Diego, California, July 11-16, 1993). M. A. Fulton, B. D. Ramsey, and J. J. Kolodziejczak. (ES65)

17. Imaging High Energy Astrophysical Sources Using Earth Occultation. No. 93-117, September 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) S. N. Zhang, G. J. Fishman, B. A. Harmon, and W. S. Paciesas. (ES66)

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18. Detection of Silicates in the 51 Ophiuchi System. No. 93-118, September 1993. (PUBLISHED, SEE SECTION ON OPEN LITERATURE.) S. B. Fajardo-Acosta, C. M. Telesco, and R. F. Knacke. (ES63)

19. A New Path for the Electron Bulk Energization in Solar Flares: Fermi Acceleration by MHD Turbulence in Reconnection Outflows. No. 93-119, October 1993, to appear in The Astrophysical Journal. T. N. LaRosa, R. L. Moore, and S. N. Shore. (ES52)

20. Analytic Solutions of the Vector Burger's Equation. No. 93-120, October 1993, to appear in the Quarterly Journal of Applied Mathematics. S. N. Nerney, E. J. Schmahl, and Z. E. Musielak. (ES52)

21. Microgravity Studies of Organic and Polymeric Materials. No. 93-121, December 1993. (PUBLISHED, SEE SECTION ON NASA REPORTS.) D. O. Frazier, C. E. Moore, and B. Cardelino (editors). (ES01)

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APPROVAL

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T. W. Moorehead

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Gregory S. Wilson
Director, Space Sciences Laboratory

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