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# Space Sciences Laboratory Publications and Presentations, January 1–December 31, 1997

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# NASA REPORTS

## Special Publications

1. The Bursting Pulsar GRO J1744-28. ESA SP-382, Publication Division, ESTEC, The Netherlands, 1997. C. Kouveliotou (ES84).

2. Discovery in Cygnus X-3 of Correlations Between the Hard X-Ray and the Radio. ESA SP-382 by ESA's Publications Division at ESTEC, Noordwijk, The Netherlands, 1997. M.L. McCollough, B.A. Harmon, R.M. Hjellming, C.R. Robinson, and S.N. Zhang (ES84).

3. High Energy Survey of Supernova Remnants with BATSE. ESA SP-382 by ESA's Publication Division at ESTEC, Noordwijk, The Netherlands, 1997. M.L. McCollough, C.A. Wilson-Hodge, S.N. Zhang, and B.A. Harmon (ES84).

## Contractor Reports

1. Evaluation of Optimum HgZnTe Crystal Growth Parameters and USML-2 Flight Support—Final Report. NASA Contractor Report, 1997. R.N. Scripa (ES75/UAB).

2. Second International Microgravity Laboratory (IML-2) Final Report. NASA RP–1405, July 1997. R.S. Snyder (ES01).

3. X-ray Transmission Microscope Development—Final Report, February 28–August 31, 1997. NASA Contractor Report, 1997. W.F. Kaukler (ES75/UAH).

## Technical Memorandums

1. Microgravity Processing and Photonic Applications of Organic and Polymeric Materials. NASA TM–108533, 1997. CDDF Final Report #95–26. D.O. Frazier, M.S. Paley, B.G. Penn, H.A. Abdeldayem, D.D. Smith, and W.K. Witherow (ES01).

2. Second United States Microgravity Laboratory (USML-2) One Year Report. NASA TM–4737, 1997. M. Vlasse, P.A. Curreri, D. McCauley, and C. Walker (ES71).

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## Technical Paper

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14. A Correlation Between Length of Strong-Shear Neutral Lines and Total X-ray Brightness in Active Regions. 28th Meeting of the Solar Physics Div. of the AAS, Bozeman, MT, June 27–July 1, 1997, *Bull. AAS, 29(2),* 885, 1997. D.A. Falconer (ES82).

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17. Expansion Factors in Coronal Holes and Plume/Interplume UVCS Observations. 28th Meeting of the Solar Physics Div. of the AAS, Bozeman, MT, June 27–July 1, 1997, *Bull. AAS, 29(2),* 881, 1997. G. Poletto, G. Corti, S. Suess, J. Kohl, et al. (ES82).

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31. Modeling the Circulation of Outer Plasmaspheric Plasma into the Outer Magnetosphere and Boundary Layer Region. 1997 Spring Meeting of the American Geophysical Union, Baltimore, MD, May 27–30, 1997. *Eos, 78(17),* 295-296, 1997. D.M. Ober, J.L. Horwitz, and D.L. Gallagher (ES83).

32. Molecular Ions in the Magnetosphere. 1997 Spring Meeting of the American Geophysical Union, Baltimore, MD, May 27–30, 1997. *Eos, 78(17),* 290 (1997). G.R. Wilson, P.D. Craven, W.K. Peterson, and S.P. Christon (ES83).

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34. Near Wake Depletion of Non-Magnetized Bodies Immersed in Mesosonic Plasma Flow. 1997 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 8–12, 1997, *Eos, 78(46),* F566, 1997. K.H. Wright, N.H. Stone, U. Samir, J. Sorensen, and J.D. Winningham (ES83).

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38. Panel Achieves Consensus Prediction of Solar Cycle 23. *Eos, 78,* 211–212, 1997. J.A. Joselyn, J.B. Anderson, H. Coffey, K. Harvey, D. Hathaway, G. Heckman, E. Hildner, W. Mende, K. Schatten, R. Thompson, A.W.P. Thomson, and O.R. White (ES82).

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40. Polar Wind Survey with TIDE/PSI Suite Aboard POLAR. 1997 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 8–12, 1997, *Eos, 78(46),* F602, 1997. Y.-J. Su, J.L. Horwitz, T.E. Moore, M.O. Chandler, P.D. Craven, and B.L. Giles (ES83).

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43. Quantifying the Complexity of Flaring Active Regions. 28th Meeting of the Solar Physics Div. of the AAS, Bozeman, MT, June 27–July 1, 1997, *Bull. AAS, 29(2),* 900, 1997. B.A. Stark and M.J. Hagyard (ES82).

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49. Stereo X-ray Corona Imager: Report on New Mission Concept Study. 1997 Spring Meeting of the American Geophysical Union, Baltimore, MD, May 27–30, 1997. *Eos, 78(17),* 255, 1997. P.C. Liewer, J.M. Davis, E.M. DeJong, J.A. Klimchuk, R. Reinert, J.M. Davila, and J. Feynman (ES82).

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51. Thermal Ion Flow Velocities as Measured by TIDE, and Inferred by EFI and MFE. 1997 Spring Meeting of the American Geophysical Union, Baltimore, MD, May 27–30, 1997. *Eos, 78(17),* 295, 1997. H.A. Elliott, R.H. Comfort, P.D. Craven, M.O. Chandler, T.E. Moore, F.S. Mozer, and C.T. Russell (ES83).

52. The Upwelling Ion Source of Low Energy Ions: Initial Results from TIDE/PSI on POLAR. 1997 Spring Meeting of the American Geophysical Union, Baltimore, MD, May 27–30, 1997. *Eos, 78(17),* 293, 1997. B.L. Giles, T.E. Moore, M.O. Chandler, P.D. Craven, and C.J. Pollock (ES83).

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## PRESENTATIONS

1. 3-D Magnetic Field Configuration Late in a Large Two-Ribbon Flare. 28th Meeting of the Solar Physics Div. of the AAS, Bozeman, MT, June 27–July 1, 1997. R.L. Moore, B. Schmieder, D.H. Hathaway, and T.D. Tarbell (ES82).

2. AB Initio Calculations on the Diacetylene Dimer. Ninth International Congress of Quantum Chemistry, Atlanta, GA, June 9–14, 1997. B.H. Cardelino, C.E. Moore, D.O. Frazier, D.G. Musaev, and K. Morokuma (ES75).

3. Advanced X-Ray Astrophysics Facility. AXAF—An Overview. Invited talk to Meeting of the High Energy Astrophysics Division (HEAD), Denver, CO, November 4–11, 1997. M.C. Weisskopf (ES01).

4. Anomalies in Coupled Energy and Water Budgets Over the Americas as Diagnosed from Pre-EOS Data Sets. AMS Annual Meeting, San Diego,CA, February 1997. F.R. Robertson and S. Marshall (ES41).

5. Application of Real-Time X-Ray Transmission Microscopy to Fundamental Studies of Metal Alloy Solidification. SPACEBOUND '97 Conference on Gravitational Materials, Montreal, Quebec, Canada, May 11–14, 1997. P.A. Curreri, W.F. Kaukler, S. Sen, and P.N. Peters (ES75).

6. Application of Remotely Sensed Data to Land Surface/Atmosphere Coupled Modeling Issues. 77th American Meteorological Society, Long Beach, CA, February 2–7, 1997. W.M. Lapenta, M. Lakhtakia, F.R. Robertson, R.T. McNider, A. Song, and J. Luvall (ES41).

7. Applications of Bayesian Statistics to Problems in Gamma Ray Bursts. Aspen Center for Physics Workshop on Gamma-Ray Bursts, Aspen, CO, August 25–29, 1997. C.A. Meegan (ES84).

8. Aromaticity in Multidimensional Molecules and Their Nonlinear Optical Properties. 26th Southeast Theoretical Chemistry Association Meeting, Birmingham, AL, May 16–17, 1997. C.E. Moore, B.H. Cardelino, T. Timofeeva, J. Niles, X.-Q. Wang, and D.O. Frazier (ES75).

9. The BATSE Catalog of Gamma-Ray Bursts. High Energy Astrophysics Division (HEAD) 1997 Meeting, Estes Park, CO, November 3–7, 1997. C.A. Meegan (ES84).

10. Bridgman Growth of Germanium. U.S.-Russian Space STAC Symposium, Huntsville, AL, November 10–13, 1997. F.R. Szofran, M.P. Volz, S.D. Cobb, and S. Motakef (ES75).

11. Bulk Growth of Wide Band Gap II-VI Compound Semiconductors by Physical Vapor Transport. SPIE's Annual Meeting, San Diego, CA, July 27–August 1, 1997. C.-H. Su (ES75).

12. Bulk Ion Parameters Derived from TOPAZ III/STICS. IPELS, 1997 Conference, Maui, HI, June 23–27, 1997. V.N. Coffey, M.O. Chandler, and T.E. Moore (ES83).

13. CdTe and (Cd, Zn) Te Crystals Grown by Physical Vapor Transport: Morphology and Its Dependence on the Growth Conditions. W. Palosz, K. Grasza, D.C. Gillies, M.A. George, E.E. Collins, K.-T. Chen, Y. Zhang, Z. Hu, A. Burger, H. Chung, B. Raghothamachar, and M. Dudley (ES75).

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14. Characterization of Structural Defects in Zinc Selenide Grown by Physical Vapor Transport. 11th Annual National Conference of Black Physics Students at the Massachusetts Institute of Technology (MIT), Boston, MA, February 27–March 2, 1997. R.D. Jones, J.-C. Wang, S.L. Lehoczky, D.C. Gillies, and C.-H. Su (ES75).

15. Characterization of Surface Energy Fluxes in a Great Basin Desert Valley. Annual Meeting of the Association of American Geographers, Ft. Worth, TX, April 1–5, 1997. D.A. Quattrochi and C.A. Laymon (ES41).

16. Characterizing Remote Sensing Images Using ICAMS. Annual Meeting of the Association of American Geographers, Ft. Worth, TX, April 1–5, 1997. H.-L. Qui, N.S.-N. Lam, and D.A. Quattrochi (ES41).

17. Chemical Processing and Analysis of "JACEE" Circumpolar Flights 13 and 14. Cosmic Ray JACEE Meeting, Hiroshima, Japan, December 5–14, 1997. W.F. Fountain (ES84).

18. Consistency Between Divergent Circulations from Reanalysis Data Sets and Satellite-Derived Precipitation, Radiation, and Surface Fluxes. Reanalysis Meeting, Washington, DC, October 27–31, 1997. F.R. Robertson, D. Fitzjarrald, and E.W. McCaul, Jr. (ES41).

19. A Critical Assessment of Protein Crystal Growth in Microgravity. American Crystallographic Association Meeting, St. Louis, MO, July 19–25, 1997. M.L. Pusey (ES76).

20. Crystal Growth and Characterization of Vanadium Doped and Undoped CdSSe. SPIE 42nd Annual Meeting, San Diego, CA, July 27–August 1, 1997. K.-T. Chen, Y.F. Chen, M. Davis, S.H. Morgan, A. Burger, C.-H. Su, M.P. Volz, and S.L. Lehoczky (ES75).

21. Crystal Growth of Solid Solution HgCdTe Alloys. Science and Tech. Advisory Council Meeting, Huntsville, AL, November 10, 1997. S.L. Lehoczky (ES71).

22. Crystalline Colloidal Arrays in Polymer Matrices. NASA URC Technical Conference, Albuquerque, NM, February 16–19, 1997. H.B. Sunkara, B.G. Penn, D.O. Frazier, and N. Ramachandran (ES76).

23. Data Analysis for the Scintillating Optical Fiber Calorimeter (SOFCAL). SCIFI97, Scintillating and Fiber Detectors Conference, South Bend, IN, November 2–6, 1997. M.J. Christl (ES84).

24. Dielectric Spectroscopy Study of ZnSe Grown by Physical Vapor Transport. 1997 Annual Fall MRS Meeting, Boston, MA, December 3, 1997. J. Kokan, R. Gerhardt, and C.-H. Su (ES75).

25. The Effects of pH on the Averaged (110) Face Growth Rates of Tetragonal Lysozyme. Spacebound 97, Montreal, Quebec, Canada, May 11–14, 1997. E. Forsyth, A. Nadarajah, and M.L. Pusey (ES76).

26. Energy Calibration of the Scintillating Optical Fiber Calorimeter Chamber (SOFCAL). 25th International Cosmic Ray Conference, Durban, South Africa, July 28–August 8, 1997. M.J. Christl, W.F. Fountain, T. Parnell, F.E. Roberts, J.C. Gregory, J. Johnson, and Y. Takahashi (ES84).

27. An Evaluation of Fractal Surface Measurement Methods Using ICAMS (Image Characterization and Modeling System). Auto-Carto 13, Seattle, WA, April 7–10, 1997. N.S.-N. Lam, H.-L. Qiu, and D.A. Quattrochi (ES41).

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28. Excursion Set Mediated Evolutionary Strategy. International Conference on Artificial Neural Networks and Genetic Algorithms, Norwich, England, April 2–4, 1997. S. Baskaran and D.A. Noever (ES76).

29. Expansion Factors in Coronal Holes and Plume/Interplume UVCS Observations. 28th Meeting of the Solar Physics Div. of the AAS, Bozeman, MT, June 27–July 1, 1997. G. Poletto, G. Corti, S.T. Suess, J. Kohl, et al. (ES82).

30. Floating-Zone Growth of Silicon in Strong Axial Magnetic Fields. Joint Annual Meeting of the German Society for Crystal Growth and the Italian Association, Freiburg, Germany, March 5–7, 1997. A. Croll, F.R. Szofran, P. Dold, Th. Kaiser, K.W. Benz, and S.L. Lehoczky (ES75).

31. Fluorescence Studies of Protein (Lysozyme) Crystal Nucleation. Spacebound 97, Montreal, Quebec, Canada, May 11–14, 1997. M.L. Pusey, D. Einhorn, and L. Smith (ES76).

32. A Fractal Module for Multispectral Image Analysis in ICAMS. 1997 Association of American Geographers Annual Meeting. W. Zhao, N.S.-N. Lam, and D.A. Quattrochi (ES41).

33. Galactic Superluminal Sources: A Multiwavelength Overview. 190th Meeting of American Astronomical Society (AAS), Winston-Salem, NC, June 8–11, 1997. B.A. Harmon (ES84).

34. Gamma-Ray Bursts—An Update. University of Kentucky, Lexington, KY, December 5, 1997. G.J. Fishman (ES81).

35. Gamma-Ray Bursts: Observational Overview. Italian Space Agency, Elba, Italy, May 25, 1997. G.J. Fishman (ES81).

36. Gamma-Ray Bursts: Where are we now? "Non-Sleeping Universe: From Galaxies to the Horizon" Conference, Porto, Portugal, November 27–29, 1997. C.A. Meegan (ES84).

37. GLAST Mission: Using Scintillating Fibers as Both the Tracker and the Calorimeter (The). SCIFI97-Conference, University of Notre Dame, South Bend, IN, November 2, 1997. G.J. Fishman (ES81).

38. Global Auroral Imaging As a Remote Diagnostic of Geospace. AIAA, 28th Plasmadynamics and Lasers Conference, Atlanta, GA, June 1997. G.A. Germany, P.G. Richards, G.K. Parks, M.J. Brittnacher, and J.F. Spann, Jr. (ES83).

39. Global Characteristics of Lightning Occurrence from Nighttime Digital DMSF Data. The Second International Symposium on Lightning, Haute-Savoie, France, June 1–5, 1997. R.G. Barry, S.J. Goodman, R. Swick, and G. Scharfen (ES41).

40. Global Warming: What We Do and Do Not Know. Central Alabama Section of the American Institute of Chemical Engineers, Birmingham, AL, May 20, 1997. R.W. Spencer (ES41).

41. Gravitational Effects on Dynamic-Solidification Behavior in Single-Crystal-Stainless Steel. Materials Research Society, Fall Meeting, Boston, MA, December 1–5, 1997. D.P. Corrigan, L.A. Boatner, M.E. Glicksman, P.A. Curreri, and G. Workman (ES75).

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42. Grazing Incidence Nickel Replicated Optics. Structure and Evolution of the Universe Technology Working Group Meeting, Greenbelt, MD, April 1, 1997. J.J. Petruzzo, R.F. Elsner, M.K. Joy, S.L. O'Dell, and M.C. Weisskopf (ES84).

43. GRO J2058+42 X-Ray Observations. 4th Compton Symposium, Williamsburg, VA, April 27–30, 1997. C.A. Wilson-Hodge, M.H. Finger, B.A. Harmon, R.B. Wilson, D. Chakrabarty, and T. Strohmayer (ES84).

44. Growth and Characterization of Cadmium-Telluride Crystals Grown by Physical Vapor Transport. 11th International Conference on Ternary and Multinary Compounds, Salford, United Kingdom, September 8–12, 1997. W. Palosz, K. Grasza, D.C. Gillies, M.A. George, E.E. Collins, K.-T. Chen, Y. Zhang, Z. Hu, A. Burger, H. Chung, B. Raghothamachar, and M. Dudley (ES75).

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## APPROVAL

## SPACE SCIENCES LABORATORY PUBLICATIONS AND PRESENTATIONS, JANUARY 1–DECEMBER 31, 1997

Compiled by F.G. Summers

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This document lists the significant publications and presentations of the Space Sciences Laboratory during the period January 1–December 31, 1997. 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 page 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 publication 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 Gregory S. Wilson (ES01; 544–7579) 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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