LENNARD A. FISK

Current Position: Thomas M. Donahue Distinguished University Professor of Space Science
Department of Atmospheric, Oceanic and Space Sciences
College of Engineering
University of Michigan
Ann Arbor, Michigan 48109-2143

EDUCATION

9/1961 - 6/1967 Cornell University. A.B. in Physics awarded in June 1965.
9/1965 - 9/1967 Cornell University.
9/1967 - 8/1969 University of California, San Diego.
Ph.D. in Applied Physics conferred December 1969.

PREVIOUS EXPERIENCE

9/2003 – 9/2006 Thomas M. Donahue Collegiate Professor of Space Science
7/1993 - 8/2003 Professor and Chair, Dept. of Atmospheric, Oceanic, and Space Sciences, University of Michigan
5/1987 - 6/1993 Associate Administrator for Space Science and Applications
National Aeronautics and Space Administration
Washington, D.C.
9/1984 - 4/1987 Vice President for Research and Financial Affairs
Professor of Physics, University of New Hampshire
Durham, New Hampshire
7/1983 - 9/1984 Interim Vice President for Financial Affairs and Administration, University of New Hampshire
7/1982 - 7/1983 Director of Research, University of New Hampshire
7/1981 - 7/1982 Director of Space Science Center, University of New Hampshire
7/1981 - 4/1987 Professor of Physics, University of New Hampshire
9/1977 - 8/1981 Associate Professor of Physics, University of New Hampshire
1/1976 - 12/1976 Visiting Associate Professor of Physics, University of New Hampshire
1/1974 - 4/1974 Visiting Associate in Theoretical Physics, California Institute of Technology
6/1971 - 8/1977 Astrophysicist, NASA/Goddard Space Flight Center
9/1969 - 6/1971 National Academy of Sciences Postdoctoral Research Fellow, NASA/Goddard Space Flight Center

HONORS AND AWARDS

2006 Thomas M. Donahue Distinguished University Professor of Space Science
2004 National Associate, National Academies of Sciences
2003 Thomas M. Donahue Collegiate Professor of Space Science
2003 Member, National Academy of Sciences
2000 Foreign Member, Academia Europaea
1999 American Geophysical Union Parker Lecture
1997 International Academy of Astronautics Basic Science Award
1994 AIAA Space Science Award
1993 Member, International Academy of Astronautics

1992 NASA Distinguished Service Medal
1991 Presidential Meritorious Rank Senior Executive
1990 NASA Outstanding Leadership Medal
1987 Fellow, American Geophysical Union

BOARDS OF DIRECTORS

2002-present	International Space Science Institute
1996 - present	Michigan Aerospace Corporation
1993 - 2001	University Corporation for Atmospheric Research
1993 - present	Orbital Sciences Corporation
1988 - 1990	American Astronautical Society

SELECTED ADVISORY COMMITTEES

11/2003-present	NASA Advisory Committee
7/2003 - present	National Academies Space Studies Board, Chairman
5/2003-5/2005	NASA Living with a Star Management Operations Working Group
9/2002-present	NASA/JPL Director's Advisory Committee
1/2002-1/2004	American Geophysical Union Fellows Committee
11/1998 - 2001	National Academy of Sciences, Space Studies Board Committee on International Space Programs
6/1997, 7/2001	NASA Senior Review of Mission Operations and Data Analysis
8/1986 - 4/1987	NASA Advisory Council
8/1986 - 4/1987	National Academy of Sciences, Space Science Board
8/1986 - 4/1987	Chair, National Academy of Sciences Committee on Solar and Space Physics
9/1985 - 4/1987	Chair, AAU Space Science Working Group, Steering Committee
9/1984 - 12/1984	Review Panel Carnegie/Mt. Wilson Observatory
1/1984 - 41987	NASA Earth System Sciences Committee
11/1983 - 4/1987	National Academy of Sciences Committee on Solar and Space Physics
9/1983 - 4/1987	AAU Space Science Working Group, Steering Committee
11/1982 - 11/1983	NASA Space and Earth Science Advisory Committee
1/1981 - 12/1983	NASA Solar System Exploration Committee
11/1979 - 5/1983	NASA Solar Terrestrial Observatory Science Study Group
4/1979 - 11/1981	NASA Space Science Advisory Committee
9/1978 - 8/1979	NASA Solar Terrestrial Theory Panel
7/1978 - 7/1979	NASA Solar Cycle and Dynamics Mission Science Working Group
5/1978 - 9/1980	JPL Solar Polar Mission Science Working Group
8/1976 - 1/1977	NASA Out-of-the Ecliptic Science Working Group, Co-Chairman
5/1976 - 5/1978	NASA Interplanetary Physics Working Group
5/1976 - 10/1976	National Academy of Sciences Subcommittee on Interplanetary Physics

FORMER AND PRESENT PH.D. STUDENTS

Valentin Jordanov, Ph.D. in 1994; Member of Committee
Nathan Schwadron, Ph.D. in 1996; Member of Committee
Emmanuel Christodoulou, Ph.D. in 1996, Member of Committee
Kandis Jessup, Ph.D. in 1996; Chair of Committee
Scott Edington, Ph.D. in 1997; Member of Committee
Timur Linde, Ph.D. in 1998; Member of Committee
Patrick Koehn, Ph.D. in 1999; Co-Chair of Committeee
Alysha Reinhard, Ph.D. in 2000; Chair of Committee

Susan Lepri, Ph.D. in 2002; Member of Committee
Kelly Korreck, Ph.D. in 2003; Member of Committee
Benjamin Lynch, Ph.D. in 2006; Member of Committee
Jason Gilbert, Ph.D. expected in 2008; Member of Committee

FORMER POST-DOCTORAL FELLOWS
Nathan Schwardon
Thomas Zurbuchen

DESCRIPTION OF RESEARCH ACTIVITIES

L. A. Fisk has published extensively and given numerous presentations on a broad range of topics in solar and heliospheric physics. His early work (in 1974) on the modulation of galactic cosmic rays in the solar wind led to the concept for the origin of the so-called anomalous component of cosmic rays, that these particles are interstellar neutral gas, which are ionized and accelerated extensively in the solar wind. Following observations by numerous spacecraft, this theory was confirmed in 1992 with verification of the principal prediction of the theory that the anomalous particles would be singly charged. L. A. Fisk has also been responsible for the development of theories for the dramatic enhancements in the isotopic composition of solar flares, and for the introduction of numerical models into studies of cosmic ray propagation.

In recent years, L. A. Fisk has been concerned with the composition of the solar wind and the global magnetic structure of the Sun. His research group at the University of Michigan is responsible for the analysis and interpretation of the solar wind composition data being acquired from the Ulysses, Advanced Composition Explorer, and WIND missions. In 1996, L. A. Fisk introduced a new concept for the global magnetic field of the solar corona and the heliosphere, and in 1999, a new concept for the acceleration of the solar wind. In a recent series of papers, L. A. Fisk has pointed out a fundamental property and a new process associated with the solar magnetic field, which unifies several solar processes that had not previously been considered to have a direct relationship.

SELECTED RESEARCH PROJECTS

9/2005 – present	NASA TR&T program, Supporting Theoretical Studies of the Processes that Control the Topology and Evolution of the Open Magnetic Flux of the Sun.
9/2003 - present	NSF, Predicting the heliosphere
7/1993 - present	NASA, Solar Wind Ion Composition Spectrometer on the Ulysses Mission
6/1979 - 4/1987	NASA, Solar Wind Ion Composition Spectrometer on Ulysses Mission
7/1993 - present	NASA, Solar Wind and Suprathermal Ion Studies on the Wind Spacecraft of the International Solar Terrestrial Program
12/1981 - 4/1987	NASA, Solar Wind and Suprathermal Ion Studies on the Wind Spacecraft of the International Solar Terrestrial Program
1/1994 - present	NASA, SWICS and Solar Wind Ion Mass Spectrometer on the Advanced Composition Explorer Mission
7/1980 - 4/1987	NASA, Theoretical Studies in the Solar Wind and its Coronal Origin, Solar Terrestrial Theory Program
10/1977 - 4/1987	NASA, Theoretical Studies in Solar Particle Physics
2/1979 - 10/1980	NASA, -Interdisciplinary Scientist, International Solar Polar Mission
6/1979 - 4/1987	National Science Foundation, Interactions of Energetic Particles with the Solar Wind -A Theoretical Study

7/1979 - 4/1982	NASA, A Solar Maximum Mission—International Sun-Earth Explorer Collaborative Study of Solar Phenomena, Solar Maximum Mission Guest Investigation Program
4/1979 - 9/1980	NASA, Cosmic Ray Experiment on International Sun-Earth Explorer-3
6/1979 - 4/1981	NASA, Comprehensive Particle Analysis System on the International Solar Polar Mission
9/1977 - 4/1987	NASA, Low-Energy Nuclear and Ionic Composition Experiment on International Sun-Earth Explorer-I
9/1977 - 4/1987	NASA, Low-Energy Nuclear and Ionic Composition Experiment on International Sun-Earth Explorer-3

PUBLICATIONS IN REFEREED JOURNALS AND BOOKS

1. Fisk, L. A., and W. I. Axford, Effects on energy changes on solar cosmic rays, *J. Geophys. Res., 73*, 4397, 1968.
2. Fisk, L. A., and W. I. Axford, Anisotropies of solar cosmic rays, *Solar Phys., 7*, 486, l969.
3. Fisk, L. A., The Behavior of Cosmic Rays in the Interplanetary Medium, Ph.D. Dissertation, University of California, San Diego, 1969.
4. Fisk, L. A., L. J. Gleeson, and W. I. Axford, Approximations in the theory of solar-cycle modulation, 11th Intl. Conf. on Cosmic Rays, Budapest *2*, 105, 1969.
5. Fisk, L. A., and W. I. Axford, Solar modulation of galactic cosmic rays, *J. Geophys. Res. 74*, 4973, 1969.
6. Fisk, L. A., and W. I. Axford, Radial gradients and anisotropies of cosmic rays in the interplanetary medium, *Solar Phys. 12*, 304, 1970.
7. Goldstein, M. L., R. Ramaty, and L. A. Fisk, Interstellar cosmic ray spectra from the nonthermal radio background from 0.4 to 400 MHz, *Phys. Rev. Lett. 24*, 1193, 1970.
8. Goldstein, M. L., L. A. Fisk, and R. Ramaty, Energy loss of cosmic rays in the interplanetary medium, *Phys. Rev. Lett. 25*, 832, 1970
9. Fisk, L. A., Solar modulation of galactic cosmic rays, *J. Geophys. Res. 76*, 221, 1971.
10. Fisk, L. A., Increases in the low energy cosmic ray intensity at the front of propagating interplanetary shock waves, *J. Geophys. Res., 76*, 1662, 1971.
11. Lingenfelter, R. E., R. Ramaty, and L. A. Fisk, Compound diffusion of cosmic rays, *Astrophys. Lett., 8*, 93, 1971.
12. Wang, J. R., L. A. Fisk, and R. P. Lin, Observations of the scatter-free solar flare electrons in the energy range 20-l000 KeV, in *Procs. 12th Intl. Conf. on Cosmic Rays*, Hobart, Tasmania *2*, 438, 1971.
13. Fisk, L. A., and M. Van Hollebeke, Quiet-time electron increases, samplers of conditions in the outer solar system, in *Procs. 12th Intl. Conf. on Cosmic Rays*, Hobart, Tasmania 542, 1971.
14. Fisk, L. A., and M. Van Hollebeke, Quiet-time electron increases, a measure of conditions in the outer solar system, *J. Geophys. Res., 77*, 2232, 1972.
15. Fisk, L. A., and K. H. Schatten, Transport of cosmic rays in the solar corona, *Solar Phys., 23*, 204, 1972.
16. Ramaty, R., T. L. Cline, and L. A. Fisk, Origin of 200 KeV interplanetary electrons, *Phys. Rev. Lett., 29*, 1039, 1972.
17. Fisk, L. A., M. A. Forman, and W. I. Axford, Solar modulation of galactic cosmic rays 3. Implications of the Compton-Getting Coefficient, *J. Geophys. Res., 78*, 995, 1973.
18. Fisk, L. A., and J. W. Sari, Correlation length for interplanetary magnetic field fluctuations, *J. Geophys. Res., 78*, 6729, 1973.
19. Fisk, L. A., Modulation of solar cosmic rays, in *High Energy Phenomena on the Sun*, edited by R. Ramaty and R. G. Stone, NASA SP-342, p. 4l8, 1973.
20. Suess, S. T., L. A. Fisk, and T. E. Holzer, Galactic cosmic ray modulation in the outer solar system: Solar wind consequences, NOAA Technical Report ERL 285-SEL 26, 1973.
21. Forman, M. A., L. A. Fisk, and W. I. Axford, Particle distribution functions in modulation theory, in *Proc. 13th Intl. Conf. on Cosmic Rays, 2*, 663, l973.
22. Fisk, L. A., Interplanetary physics--A summary paper, in *Proc. Solar Terrestrial Relations Conf.*, Calgary, p. 713, 1973.
23. Fisk, L. A., M. L. Goldstein, A. J. Klimas, and G. Sandri, The Fokker-Planck Coefficient for pitch angle scattering of cosmic rays, *Astrophys. J., 190*, 417, 1974.

24. Fisk, L. A., B. Kozlovski and R. Ramaty, An interpretation of the observed oxygen and nitrogen enhancements in low energy cosmic rays, *Astrophys. J. Lett., 190*, L35, 1974.
25. Fisk, L. A., Solar modulation, in *High Energy Particles and Quanta in Astrophysics*, edited by F. B. McDonald and C. E. Fichtel, MIT Press, Cambridge, p. 170, 1974.
26. McDonald, F. B., C. E. Fichtel, and L. A. Fisk, Solar particles (observations, relationship to the sun, acceleration, interplanetary medium), in *High Energy Particles and Quanta in Astrophysics*, edited by F. B. McDonald and C. E. Fichtel, MIT Press, Cambridge, p. 212, 1974.
27. Fisk, L. A., On the oxygen and nitrogen enhancements observed in low-energy cosmic rays, in *Proc. 14th Intl. Conf. on Cosmic Rays*, 810, 1975.
28. Fisk, L. A., Possible evidence for latitude-dependent cosmic ray modulation, in *Proc. 14th Intl. Conf. on Cosmic Rays*, *905*, 1975.
29. Fisk, L. A., Solar modulation and a galactic origin for the anomalous component observed in low-energy cosmic rays, *Astrophys. J., 206*, 333, 1976.
30. Fisk, L. A., Solar modulation of galactic cosmic rays 4. Latitude-dependent modulation, *J. Geophys. Res., 8l*, 4646, 1976.
31. Fisk, L. A., The acceleration of energetic particles in the interplanetary medium by transit time damping, *J. Geophys. Res., 81*, 4633, 1976.
32. Fisk, L. A., On the acceleration of energetic particles in the interplanetary medium, *J. Geophys. Res., 8l*, 464l, 1976.
33. Fisk, L. A., and W. I. Axford, editors, *Proceedings of the Symposium on the Study of the Sun and Interplanetary Medium in Three Dimensions*, NASA/GSFC x-document #660-76-53, 1976.
34. Anderson, K., L. A. Fisk, and G. Gloeckler, Studies of the Sun and astrophysical phenomena based on particle observations in interplanetary space, Report of the Committee on Space Astronomy and Astrophysics of the National Academy of Sciences, 1977.
35. Fisk, L. A., M. Neugebauer, S. J. Bame, J. D. Bohlin, J. Fainberg, A. Krieger, S. M. Krimigis, R. R. Meier, E. M. Reeves, F. L. Scarf, J. A. Simpson, E. J. Smith, and R. Vogt, The NASA/ESA Dual Spacecraft Out-of-Ecliptic Mission--A scientific summary, Jet Propulsion Laboratory Publication #660-53, 1977.
36. Fisk, L. A., The interactions of energetic particles with the solar wind, Report of the Subpanel on Heliospheric Hydrodynamics, National Academy of Sciences Study on Space Plasma Physics, 1978.
37. Neugebauer, M., L. A. Fisk, R. E. Gold, R. P. Lin, G. Newkirk, J. A. Simpson, and M. A. I. Van Hollebeke, The energetic particle environment of the Solar Probe Mission, Jet Propulsion Laboratory Publication #78-64, 1978.
38. Hovestadt, D., G. Gloeckler, C. Y. Fan, L. A. Fisk, F. M. Ipavich, B. Klecker, J. J. O'Gallagher, M. Scholer, H. Arbinger, J. Cain, H. Hofner, E. Kunneth, P. Laeverenz, and E. Tums, The nuclear and ionic charge distribution particle experiments on the ISEE-1 and ISEE-C spacecraft, *Trans. IEEE Geoscience Electronics*, *GE-16*, 166, 1978.
39. von Rosenvinge, T. T., F. B. McDonald, J. H. Trainor, M.A.I. Van Hollebeke, and L. A. Fisk, The medium energy cosmic-ray experiment for ISEE-C, *Trans. IEEE Geoscience Electronics*, GE-16, 208, 1978.
40. Fisk, L. A., ^{3}He-rich flares: A possible explanation, *Astrophys. J.*, *224*, 1048, 1978.
41. Hovestadt, D., G. Gloeckler, C. Y. Fan, L. A. Fisk, F. M. Ipavich, B. Klecker, J. J. O'Gallagher, and M. Scholer, Evidence for solar wind origin of energetic heavy ions in the Earth's radiation belt, *Geophys. Res. Lett.*, *5* (12), 1055, 1978.
42. Hovestadt, D., G. Gloeckler, C. Y. Fan, L. A. Fisk, F. M. Ipavich, B. Klecker, J. J. O'Gallagher and M. Scholer, Messung der Kernladungszusammensetzung des Strahlungsgürtels in Aequatornähe, *Verh. der DPG*, *7*, 1110, Munich, 1978.

43. Scholer, M., F. M. Ipavich, G. Gloeckler, D. Hovestadt, B. Klecker, C. Y. Fan, L. A. Fisk, and J. J. O'Gallagher, Beobachtung niederenergetischer geladener Teilchen in der Nähe der Bugstosswelle der Erde mit ISEE-1, *Verh. der DPG*, *7*, 420, Munich, 1978.
44. Fisk, L. A., ^{3}He-rich solar flares and related problems in flare composition, in *Proc. of 10th International Seminar on Nuclear Space Physics*, Leningrad, USSR, p. 22, 1978.
45. Fisk, L. A., The interactions of energetic particles with the solar wind, in *Solar System Plasma Physics: A Twentieth Anniversary Overview*, Vol. l, ed. by C. F. Kennel, L. J. Lanzerotti, and E. N. Parker, North Holland Publishing Co., 1979.
46. Gloeckler, G., D. Hovestadt, L. A. Fisk, Observed distribution functions of H, He, C, O, and Fe in corotating energetic particle streams: Implications for interplanetary acceleration and propagation, *Astrophys. J. Lett.*, *230*, L191-L195, 1979.
47. Ipavich, F. M., G. Gloeckler, C. Y. Fan, L. A. Fisk, D. Hovestadt, B. Klecker, J. J. O'Gallagher, and M. Scholer, Initial observations of low energy charged particles near the Earth's bow shock on ISEE-1, *Space Sci. Rev.*, *23*, 93, 1979.
48. Fisk, L. A., Rapporteur paper on coronal propagation, interplanetary propagation, and interplanetary acceleration, in *15th International Conference/Cosmic Rays*, *Plovdiv*, *10*, 324, 1979.
49. Fisk, L. A., On the acceleration of energetic particles in the solar wind, in *Proc. Solar Wind Conference 4*, Burghausen, Germany, 1979.
50. Fisk, L. A., Contributions of SCADM to solar-terrestrial physics, in *Proc. Symp.: Study of the Solar Cycle from Space*, GSFC/AAS, Wellesley, Mass., NASA Conf. Pub. 2098, p. 277, 1979.
51. Fisk, L. A., Mechanisms for energetic particle acceleration in the solar wind, in *Particle Acceleration Mechanisms in Astrophysics: Proceedings of the Workshop*, La Jolla, CA, Jan. 3-5, 1979, New York, American Institute of Physics, p. 63-79, 1979.
52. Scholer, M., F. M. Ipavich, G. Gloeckler, D. Hovestadt, C. Y. Fan, L. A. Fisk, B. Klecker, and J. J. O'Gallagher, Pitch angle distributions of energetic protons near the Earth's bow shock, *Geophys. Res. Lett., 6* (9), 707-710, 1979.
53. Fisk, L. A., and M. A. Lee, Shock acceleration of energetic particles in corotating interaction regions in the solar wind, *Astrophys. J.*, *237*, 620-626, 1980.
54. Mason, G. M., G. Gloecker, L. A. Fisk, and D. Hovestadt, A survey of approximately l MeV/nucleon solar flare particle abundances, $1 \leq 7 \leq 26$, during the 1973-1977 solar minimum period, *Astrophys. J.*, *239*, 1070-1088, 1980.
55. Fisk, L. A., Solar modulation of galactic cosmic rays, in *The ancient sun: Foccil record in the Earth, moon, and meteorites; Proceedings of the Conference*, Boulder, CO, Oct. 16-19, 1979, ed. by R. O. Pepin, J. A. Eddy, and R. B. Merrill, New York and Oxford, Pergamon Press, pp. 103-118, 1980.
56. Fisk, L. A., Contributions of SCADM to solar-terrestrial physics, in *NASA Goddard Space Flight Center Study of the Solar Cycle from Space*, 277-289, 1980.
57. Hovestadt, D., E. Möbius, C. Y. Fan, L. A. Fisk, G. Gloeckler, F. M. Ipavich, B. Klecker, M. Scholer and J. J. O'Gallagher, Investigation of the energy spectra and their temporal evolution during ^{3}He-rich events, in *International Cosmic Ray Conference*, 16th, Kyoto, Japan, Aug. 6-18, 1979, Conference Papers Vol. 5, Tokyo, Univ. of Tokyo, pp. 101-107, 1980.
58. Hovestadt, D., B. Klecker, G. Gloeckler, F. M. Ipavich, C. Y. Fan, and L. A. Fisk, Temporal variations on the anomalous oxygen (1974-1979) and disappearance in 1978, in *International Cosmic Ray Conference*, 16th, Kyoto, Japan, Aug. 6-18, 1979, Conference Papers Vol. 3, Tokyo, Univ. of Tokyo, pp. 255-260, 1980.
59. Ipavich, F. M., A. B. Galvin, G. Gloeckler, D. Hovestadt, B. Klecker, M. Scholer, C. Y. Fan, L. A. Fisk, and J. J. O'Gallagher, Composition and energy spectra of low energy ions observed upstream of the Earth's bow shock on ISEE-1, in *International Cosmic Ray*

Conference, 16th, Kyoto, Japan, Aug. 6-18, 1979, Conference Papers Vol. 3, Tokyo, Univ. of Tokyo, pp. 140-144, 1980.

60. Scholer, M., F. M. Ipavich, G. Gloeckler, C. Y. Fan, L. A. Fisk, D. Hovestadt, B. Klecker, and J. J. O'Gallagher, Energetic ions upstream of the Earth's bow shock observed on ISEE-1 and ISEE-3, in *International Cosmic Ray Conference*, 16th, Kyoto, Japan, Aug. 6-18, 1979, Conference Papers Vol. 3, Tokyo, Univ. of Tokyo, pp. 287, 1980.
61. Hovestadt, D., H. Hoefner, B. Klecker, M. Scholer, G. Gloeckler, F. M. Ipavich, C. Y. Fan, L. A. Fisk, and J. J. O'Gallagher, Singly charged energetic helium emitted in solar flares, *Astrophys. J. Lett.*, *246*, L8l-L84, 1981.
62. Fisk, L. A., Prediction of energetic particle behavior at high solar latitudes, *Adv. Space Res.*, *l*, 41-55, 1981.
63. Fisk, L. A., and M. A. Lee, Shock acceleration of energetic particles in corotating interaction regions, *Adv. Space Res.*, *l*, 93, 1981.
64. Lee, M. A., and L. A. Fisk, The role of particle drifts in solar modulation, *Astrophys. J.*, *248*, 836-844, 1981.
65. Lee, M. A., L. A. Fisk, and G. Skadron, Acceleration of energetic ions at the Earth's bow shock, *Geophys. Res. Lett.*, *8*, 40l-404, 1981.
66. Hovestadt, D., H. Hofner, B. Klecker, M. Scholer, G. Gloeckler, F. M. Ipavich, C. Y. Fan, L. A. Fisk, and J. J. O'Gallagher, Direct observation of charge state abundances of energetic He, C, O, and Fe emitted in solar flares, *Adv. Space Res.*, *l* (3), 61-64, 1981.
67. Klecker, B., M. Scholer, D. Hovestadt. C. Y. Fan, L. A. Fisk, G. Gloeckler, F. M. Ipavich, and J. J . O'Gallagher, On compositional variations of heavy ions during solar particle events, *Adv. Space Res.*, *l*, 65-68, 1981.
68. Gloeckler, G., H. Weiss, F. M. Ipavich, D. Hovestadt, B. Klecker, M. Scholer, L. A. Fisk, C. Y . Fan, and J. J. O'Gallagher, Observations of the ionization states of energetic particles accelerated in solar flares, in *Proc. 17th Intl. Conf. on Cosmic Rays*, France, Vol. 3, SH3.1-7, pp. 136-139, 1981.
69. Lee, M. A., and L. A. Fisk, Shock acceleration of energetic particles in the heliosphere, Study of Travelling Interplanetary Phenomena Workshop on Shock Waves in the Solar Corona and Interplanetary Space, Smolenice, Czechoslovakia, *Space Sci. Rev.*, *32* (1-2), 205-228, 1982.
70. Perko, J., and L. A. Fisk, Solar modulation of galactic cosmic rays. V - Time-dependent modulation, *J. Geophys. Res.*, *88*, 9033-9036, 1983.
71. Fisk, L. A., Solar cosmic rays--Their injection, acceleration, and propagation, in *Solar-Terrestrial Physics*, ed. by R. L. Carovillano and J. M. Forbes, Dordrecht, Reidel, pp. 20l-215, 1983.
72. Fisk, L. A., Solar modulation of galactic cosmic rays, in *Solar-Terrestrial Physics*, ed. by R. L. Carovillano and J. M. Forbes, Dordrecht, Reidel, pp. 217-230, 1983.
73. Fisk, L. A., The acceleration of energetic particles in the solar wind, in *Solar-Terrestrial Physics: Principles and Theoretical Foundations*, ed. by R. L. Carovillano and J. M. Forbes, Dordrecht, Reidel, pp. 231-241, 1983.
74. Gloeckler, G., J. Geiss, H. Balsiger, L. A. Fisk, F. Gleim, F. M. Ipavich, K. W. Ogilvie, W. Studemann, and B. Wilken, The ISPM Solar-Wind Ion Composition Spectrometer, ESA Special Pub. SP-1050, 77, 1983.
75. Fisk, L. A., R. Arnoldy, L. Lanzerotti, R. Lin, E. Oran, J. Reagan, M. Schultz, and B. Tsuratani, Impact of flares on the solar terrestrial environment, in *Solar-Terrestrial Physics: Present and Future,* ed. by D. M. Butler and K. Papadopoulos, NASA Pub. 1120, p. 9-l, l984.

76. Klecker, B., D. Hovestadt, M. Scholer, G. Gloeckler, F. M. Ipavich, C. Y. Fan, and L. A. Fisk, Direct determination of the ionic charge distribution of helium and iron in the ^{3}He-rich solar energetic particle events, *Astrophys. J.*, *28l*, 458-462, 1984.
77. Luhn, A., B. Klecker, D. Hovestadt, M. Scholer, G. Gloeckler, F. M. Ipavich, C. Y. Fan, and L. A. Fisk, Ionic charge states of N, Ne, Mg, Si, and S in solar energetic particle events, *Adv. Space Res.*, *4* (2-3), 161-164, 1984.
78. Isenberg, P. A., P. P. Chih, and L. A. Fisk, The heating of the solar wind by the interstellar neutral gas, *J. Geophys. Res.*, *90*, 12,040-12,046, 1985.
79. Newkirk, G., Jr., and L. A. Fisk, Variation of cosmic rays and solar wind properties with respect to the heliospheric current sheet. I - Five-GeV protons and the solar wind speed, *J. Geophys. Res.*, *90*, 3391-3414, 1985.
80. Luhn, A., D. Hovestadt, B. Klecker, M. Scholer, G. Gloeckler, F. M. Ipavich, A. B. Galvin, C. Y. Fan, and L. A. Fisk, The mean ionic charges of N, Ne, MG, SI, and S in solar energetic particle events, in *NASA Goddard Space Flight Center 19th Intl. Cosmic Ray Conf.*, Vol. 4, pp. 241-244, 1985.
81. Potgieter, M. S., L. A. Fisk, and M. A. Lee, On the anomalous component, in *NASA Goddard Space Flight Center 19th Intl. Cosmic Ray Conf.*, Vol. 5, pp. 180-183, 1985.
82. Fisk, L. A., The anomalous component, its variation with latitude and related aspects of modulation, in *The Sun and the Heliosphere in Three Dimensions*, ed. by R. G. Marsden, Dordrecht, Reidel, pp. 401-411, 1986.
83. Fisk, L. A., Summary remarks, in *The Sun and the Heliosphere in Three Dimensions*, ed. by R. G. Marsden, Dordrecht, Reidel, p. 493, 1986.
84. Ipavich, F. M., A. B. Galvin, G. Gloeckler, D. Hovestadt, S. J. Bame, B. Klecker, M. Scholer, L. A. Fisk, and C. Y. Fan, Solar wind Fe and CNO measurements in high-speed flows, *J. Geophys. Res.*, *9l* (A4), 4133-4141, 1986.
85. Fisk, L. A., NASA solar physics program, *Bull. Amer. Astronom. Soc.*, *21*, 833, 1989.
86. Gloeckler, G., J. Geiss, H. Balsiger, P. Bedini, J. C. Cain, J. Fischer, L. A. Fisk, A. B. Galvin, F. Gliem, D. C. Hamilton, J. V. Hollweg, F. M. Ipavich, R. Joss, S. Livi, R. Lundgren, U. Mall, J. F. McKenzie, K. W. Ogilvie, F. Ottens, W. Rieck, E. O. Tums, R. von Steiger, W. Weiss and B. Wilken, The Solar Wind Ion Composition Spectrometer, *Astron. Astrophys. Suppl. Ser.*, *92* (2), 267-289, 1992.
87. Geiss, J., G. Gloeckler, H. Balsiger, L. A. Fisk, A. B. Galvin, F. Gliem, D. C. Hamilton, F. M. Ipavich, S. Livi, U. Mall, K. W. Ogilvie, R. von Steiger, and B. Wilken, Plasma composition in Jupiter's magnetosphere - Initial results from the Solar Wind Ion Composition Spectrometer, *Science*, *257* (5076), 1535-1539, 1992.
88. Gloeckler, G., J. Geiss, H. Balsiger, L. A. Fisk, A. B. Galvin, F. M. Ipavich, K. W. Ogilvie, R. von Steiger, and B. Wilken, Detection of interstellar pick-up hydrogen in the solar system, *Science*, *261* (5117), 70-73, 1993.
89. Fisk, L. A., Reflections on the future of the space program, *Aerospace America*, *32*, 22, 1994.
90. Gloeckler, G., J. Geiss, E. C. Roelof, L. A. Fisk, F. M. Ipavich, K. W. Ogilvie, L. J. Lanzerotti, R. von Steiger, and B. Wilken, Acceleration of interstellar pickup ions in the disturbed solar wind observed on Ulysses, *J. Geophys. Res.*, *99* (A9), 17,637-17,643, 1994.
91. Fisk, L. A., and N. A. Schwadron, The influence of intermediate-scale variations in the heliospheric magnetic field on the transport of galactic cosmic rays, *J. Geophys. Res.*, *100* (A5), 7865-7871, 1995.
92. Gloeckler, G., H. Balsiger, A. Bürgi, P. Bochsler, L. A. Fisk, A. B. Galvin, J. Geiss, F. Gliem, D. C. Hamilton, T. E. Holzer, D. Hovestadt, F. M. Ipavich, E. Kirsch, R. A. Lundgren, K. W. Ogilvie, R. B. Sheldon, and B. Wilken, The solar wind and

suprathermal ion composition investigation on the Wind spacecraft, *Space Sci. Rev.*, *71*, 79-124, 1995.

93. Geiss, J., G. Gloeckler, R. von Steiger, H. Balsiger, L. A. Fisk, A. B. Galvin, F. M. Ipavich, S. Livi, J. F. McKenzie, K. W. Ogilvie, and B. Wilken, The southern high-speed stream: Results from the SWICS instrument on Ulysses, *Science*, *268* (5213)s, 1033, 1995.
94. Gloeckler, G., N. A. Schwadron, L. A. Fisk, and J. Geiss, Weak pitch angle scattering of few MV rigidity ions from measurements of anisotropies in the distribution function of interstellar pickup H^+, *Geophys. Res. Lett.*, *22* (19), 2265, 1995.
95. Geiss, J., G. Gloeckler, L. A. Fisk, and R. von Steiger, C^+ pickup ions in the heliosphere and their origin, *J. Geophys. Res.*, *100* (A12), 23,373-23,378, 1995.
96. Fisk, L. A., Exploring the heliosphere in three dimensions: A keynote presentation, in the *High latitude Heliosphere. Proceedings of the 28th ESLAB Symposium*, Friedrichshafen, Germany, April 1994, *Space Sci. Rev.*, *72*, 5, 1995.
97. Gloeckler, G., A. B. Galvin, F. M. Ipavich, D. C. Hamilton, P. Bochsler, J. Geiss, L. A. Fisk, and B. Wilken, Elemental and charge state composition of the fast solar wind observed with SMS instruments on WIND, *Intl. Solar Wind 8 Conf.*, Maryland University, p. 35, 1995.
98. Fisk, L. A., Motion of the footpoints of heliospheric magnetic field lines at the Sun: Implications for recurrent energetic particle events at high heliographic latitudes, *J. Geophys. Res.*, *101* (A7), 15,547-15,554, 1996.
99. Fisk, L. A., Implications of a weak termination shock, *Space Sci. Rev.*, *78*, 129-136, 1996.
100. Ko, Y.-K., L. A. Fisk, G. Gloeckler, and J. Geiss, Limitations on suprathermal tails of electrons in the lower solar corona, *Geophys. Res. Lett.*, *23* (20), 2785, 1996.
101. Schwadron, N. A., L. A. Fisk, and G. Gloeckler, Statistical acceleration of interstellar pick-up ions in corotating interaction regions, *Geophys. Res. Lett.*, *23* (21), 2871, 1996.
102. Fisk, L. A., N. Schwadron, and G. Gloeckler, Implications of fluctuations in the distribution functions of interstellar pick-up ions for the scattering of low rigidity particles, *Geophys. Res. Lett.*, *24* (1), 93, 1997.
103. Ko, Y.-K., L. A. Fisk, J. Geiss, G. Gloeckler, and M. Guhathakurta, An empirical study of the electron temperature and heavy ion velocities in the south polar coronal hole, *Solar Physics*, *171* (2), 345-361, 1997.
104. Gloeckler, G., L. A. Fisk, and J. Geiss, Anomalously small magnetic field in the local interstellar cloud, *Nature*, *386*, 374-377, 1997.
105. Zurbuchen, T. H., N. A. Schwadron, and L. A. Fisk, Direct observational evidence for a heliospheric magnetic field with large excursions in latitude, *J. Geophys. Res.*, *102* A11), 24,175-24,182, 1997.
106. Zurbuchen, T. H., L. A. Fisk, N. A. Schwadron, and G. Gloeckler, The structure of the low corona and its implication on the origin of the slow solar wind, Amer. Astron. Soc. SPD meeting #28, *Bull. Amer. Astron. Soc.*, *29*, 918, 1997.
107. Fisk, L. A., N. A. Schwadron, and T. H. Zurbuchen, On the slow solar wind, Proceedings of the ACE Science Workshop, Pasadena, California, *Space Sci. Rev.*, *86* (1/4), 51-60, 1998.
108. Gloeckler, G., J. Cain, F. M. Ipavich, E. O. Tums, P. Bedini, L. A. Fisk, T. H. Zurbuchen, P. Bochsler, J. Fischer, R. F. Wimmer-Schweingruber, J. Geiss, and R. Kallenbach, Investigation of the composition of solar and interstellar matter using solar wind and pickup ion measurements with SWICS and SWIMS on the ACE spacecraft, *Space Sci. Rev.*, *86* (1/4), 497-539, 1998.
109. Balsiger, H., K. Altwegg, E. Arijs, J.-L. Bertaux, J.-J. Berthelier, P. Bochsler, G. R. Carignan, P. Eberhardt, L. A. Fisk, S. A. Fuselier, A. G. Ghielmetti, F. Gliem, T. I.

Gombosi, E. Kopp, A. Korth, S. Livi, C. Mazelle, H. Rème, J. A. Sauvaud, E. G. Shelley, J. H. Waite, B. Wilken, J. Woch, H. Wollnik, P. Wurz, and D. T. Young, Rosetta orbiter spectrometer for ion and neutral analysis-rosina, *Adv. Space Res.*, *21* (11), 1527-1535, 1998.

110. Fisk, L. A., K.-P. Wenzel, A. Balogh, R. A. Burger, A. C. Cummings, P. Evenson, B. Heber, J. R. Jokipii, M. B. Krainev, J. Kóta, H. Kunow, J. A. Le Roux, F. B. McDonald, R. B. McKibben, M. S. Potgieter, J. A. Simpson, C. D. Steenberg, S. Suess, W. R. Webber, G. Wibberenz, M. Zhang, P. Ferrando, Z. Fujii, J. A. Lockwood, H. Moraal, and E. C. Stone, Global processes that determine cosmic ray modulation, *Space Sci. Rev.*, *83* (1/2), 179-214, 1998.
111. Fisk, L. A., J. R. Jokipii, G. M. Simnett, and K.-P. Wenzel, Introduction, *Space Sci. Rev.*, *83* (1/2), 1-4, 1998.
112. Zurbuchen, T. H., L. A. Fisk, G. Gloeckler, and N. A. Schwadron, Element and isotopic fractionation in closed magnetic structures, in *Solar Composition and Its Evolution -- From Core to Corona,* Proc. of an ISSI Wksp., Bern, Switzerland, 26-30 January, 1998, edited by C. Fröhlich, M. C. E. Huber, S. K. Solanki, and R. von Steiger, Dordrecht, Kluwer, p. 397, 1998. *Space Sci. Rev.*, *85* (1/2), 397, 1998.
113. Fisk, L. A., The major discoveries of the ULYSSES mission, in *25th Intl. Cosmic Ray Conf.*, 30 July - 6 August 1997, Durban, South Africa, Vol. 8., edited by M. S. Potgieter, B. C. Raubenheimer, and D. J. van der Walt, New Jersey, World Scientific, p. 27, 1998.
114. Fisk, L. A., editor, *Cosmic Rays in the Heliosphere*, Proc. ISSI Wksp, 17-20 Sept. 1996 and 10-14 March 1997, Bern, Switzerland, *Space Sci. Rev., 83* (1/2), Dordrecht, Kluwer, 1998.
115. Fisk, L. A., T. H. Zurbuchen, and N. A. Schwadron, On the corona magnetic field: Consequences of large-scale motions, *Astrophys. J.*, *521* (2), 868-877, 1999.
116. Schwadron, N. A., L. A. Fisk, and T. H. Zurbuchen, Elemental fractionation in the slow solar wind, *Astrophys. J.*, *521* (2), 859-867, 1999.
117. Schwadron, N. A., T. H. Zurbuchen, L. A. Fisk, and G. Gloeckler, Pronounced enhancements of pickup hydrogen and helium in high-latitude compressional regions, *J. Geophys. Res.*, *104* (A1), 535-548, 1999.
118. Gloeckler, G., L. A. Fisk, S. Hefti, N. A. Schwadron, T. H. Zurbuchen, F. M. Ipavich, J. Geiss, P. Bochsler, and R. F. Wimmer-Schweingruber, Unusual composition of the solar wind in the May 2-3, 1998, CME observed with SWICS on ACE, *Geophys. Res. Lett.*, *26* (2), 157, 1999.
119. Fisk, L. A., T. H. Zurbuchen, and N. A. Schwadron, Coronal hole boundaries and their interactions with adjacent regions, *Space Sci. Rev.*, *87* (1/2), 43-54, 1999.
120. Fisk, L. A., An overview of the transport of galactic and anomalous cosmic rays in the heliosphere: Theory, Proceedings of the COSPAR in Nagoya, *Adv. Space Res.*, *23* (3), 415-423, 1999.
121. Fisk, L. A., and J. R. Jokipii, Mechanisms for latitude transport of energetic particles in the heliosphere, *Space Sci. Rev.*, *89* (1/2), 115-124, 1999.
122. Wimmer-Schweingruber, R. F., P. Bochsler, G. Gloeckler, F. M. Ipavich, J. Geiss, R. Kallenbach, L. A. Fisk, S. Hefti, and T. H. Zurbuchen, On the bulk isotopic composition of magnesium and silicon during the May 1998 CME: ACE/SWIMS, *Geophys. Res. Lett.*, *26* (2), 165, 1999.
123. Fisk, L. A., N. A. Schwadron, and T. H. Zurbuchen, Acceleration of the fast solar wind by the emergence of new magnetic flux, *J. Geophys. Res.*, *104* (A9), 19,765-19,772, 1999.
124. Scholer, M., G. Mann, S. Chalov, M. I. Desai, L. A. Fisk, J. R. Jokipii, R. Kallenbach, E. Keppler, J. Kóta, H. Kunow, M. A. Lee, T. R. Sanderson, and G. M. Simnett, Origin,

injection, and acceleration of CIR particles: Theory report of Working Group 7, *Space Sci. Rev.*, *89* (1/2), 369-399, 1999.

125. Mason, G. M., R. von Steiger, R. B. Decker, M. I. Desai, J. R. Dwyer, L. A. Fisk, G. Gloeckler, J. T. Gosling, M. Hilchenbach, R. Kallenbach, E. Keppler, B. Klecker, H. Kunow, G. Mann, I. G. Richardson, T. R. Sanderson, G. M. Simnett, Y.-M. Wang, R. F. Wimmer-Schweingruber, M. Fränz, and J. E. Mazur, Origin, injection, and accerlation of CIR particles: Observations report of Working Group 6, *Space Sci. Rev.*, *89* (1/2), p. 327-367, 1999.
126. Kunow, H., M. A. Lee, L. A. Fisk, R. J. Forsyth, B. Heber, T. S. Horbury, E. Keppler, J. Kóta, Y.-Q. Lou, R. B. McKibben, C. Paizis, M. S. Potgieter, E. C. Roelof, T. R. Sanderson, G. M. Simnett, R. von Steiger, B. T. Tsurutani, R. F. Wimmer-Schweingruber, and J. R. Jokipii, Corotating interaction regions at high latitudes, *Space Sci. Rev.*, *89* (1/2), 221-268, 1999.
127. Zurbuchen, T. H., S. Hefti, L. A. Fisk, G. Gloeckler, and R. von Steiger, The transition between fast and slow solar wind from composition data, *Space Sci. Rev.*, *87* (1/2), 353-356, 1999.
128. Zurbuchen, T. H., L. A. Fisk, S. Hefti, and N. A. Schwadron, The new heliospheric magnetic field: Observational implications, in *Solar Wind Nine, Proc. of the Ninth Intl. Solar Wind Conf.*, AIP Conf. Proc., Vol. 471, p. 87, 1999.
129. Schwadron, N. A., G. Gloeckler, L. A, Fisk, J. Geiss, and T. H. Zurbuchen, The inner source for pickup ions, in *Solar Wind Nine, Proc. of the Ninth Intl. Solar Wind Conf.*, AIP Conf. Proc., Vol. 471, p. 487, 1999.
130. Hefti, S., T. H. Zurbuchen, L. A. Fisk, G. Gloeckler, D. Larson, and R. P. Lin, The transition from fast to slow solar wind: Charge state composition and electron observations, in *Solar Wind Nine, Proceedings of the Ninth Intl. Solar Wind Conf.*, AIP Conf. Proc. Vol. 471, p. 495, 1999.
131. von Steiger, R., L. A. Fisk, G. Gloeckler, N. A. Schwadron, and T. H. Zurbuchen, Composition variations in fast solar wind streams, in *Solar Wind Nine, Proceedings of the Ninth Intl. Solar Wind Conf.*, AIP Conf. Proc. Vol. 471, p. 143, 1999.
132. Gloeckler, G., L. A. Fisk, J. Geiss, N. A. Schwadron, and T. H. Zurbuchen, Elemental composition of the inner source pickup ions, *J. Geophys. Res.*, *105* (A4), 7459-7464, 2000.
133. Gloeckler, G., J. Geiss, N. A. Schwadron, L. A. Fisk, T. H. Zurbuchen, F. M. Ipavich, R. von Steiger, H. Balsinger, and B. Wilken, Interception of comet Hyakutake's ion tail at a distance of 500 million kilometers, *Nature*, *404* (6778), 576-578, 2000.
134. Schwadron, N. A., J. Geiss, L. A. Fisk, G. Gloeckler, T. H. Zurbuchen, and R. von Steiger, Inner source distributions: Theoretical interpretation, implications, and evidence for inner source protons, *J. Geophys. Res.*, *105* (A4), 7465-7472, 2000.
135. Zurbuchen, T. H., S. Hefti, L. A. Fisk, G. Gloeckler, and N. A. Schwadron, Magnetic structure of the slow solar wind: Constraints from composition data, *J. Geophys. Res.*, *105* (A8), 18,327-18,336, 2000.
136. Chotoo, K., N. A. Schwadron, G. M. Mason, T. H. Zurbuchen, G. Gloeckler, A. Posner, L. A. Fisk, A. B. Galvin, D. C. Hamilton, and M. R. Collier, The suprathermal seed population for corotating interaction region ions at 1 AU deduced from composition and spectra of H^+, He^{++}, and He^+ observed on Wind, *J. Geophys. Res.*, *105* (A10), 23,107-23,122, 2000.
137. Szegö, K., K.-H. Glassmeier, R. Bingham, A. Bogdanov, C. Fischer, G. Haerendel, A. Brinca, T. Cravens, E. Dubinin, K. Sauer, L. Fisk, T. Gombosi, N. Schwadron, P. Isenberg, M. Lee, C. Mazelle, E. Möbius, U. Motschmann, D. Vitali, B. Tsurutani, and G. Zank, Physics of mass loaded plasmas, *Space Sci. Rev.*, *94* (3/4), 429-671, 2000.

138. von Steiger, R., N. A. Schwadron, L. A. Fisk, J. Geiss, G. Gloeckler, S. Hefti, B. Wilken, R. F. Wimmer-Schweingruber, and T. H. Zurbuchen, Composition of quasi-stationary solar wind flows from Ulysses/Solar Wind Ion Composition Spectrometer, *J. Geophys. Res.*, *105* (A12), 27,217-27,238, 2000.
139. Maclennan, C. G., L. J. Lanzerotti, L. A. Fisk, and R. E. Gold, Charged particle composition in the inner heliosphere during the rise to maximum of solar cycle 23, in *Acceleration and Transport of Energetic Particles Observed in the Heliosphere: Proc. of the ACE-2000 Symp.*, 5-8 Jan. 2000, Indian Wells, CA, AIP Conf. Proc., Vol. 528, edited by R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Möbius, and T. H. Zurbuchen, New York, AIP, p. 169, 2000.
140. Fisk, L. A., G. Gloeckler, T. H. Zurbuchen and N. A. Schwadron, Ubiquitous statistical acceleration in the solar wind, in *Acceleration and Transport of Energetic Particles Observed in the Heliosphere: Proc. of the ACE-2000 Symp.*, 5-8 Jan. 2000, Indian Wells, CA, AIP Conf. Proc., Vol. 528, edited by R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Möbius, and T. H. Zurbuchen, New York, AIP, p. 229, 2000.
141. Gloeckler, G., L. A. Fisk, T. H. Zurbuchen, and N. A. Schwadron, Sources, injection, and acceleration of heliospheric ion populations, in *Acceleration and Transport of Energetic Particles Observed in the Heliosphere: Proc. of the ACE-2000 Symp.*, 5-8 Jan. 2000, Indian Wells, CA, AIP Conf. Proc., Vol. 528, edited by R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Möbius, and T. H. Zurbuchen, New York, AIP, p. 221, 2000.
142. Zurbuchen, T. H., L. A. Fisk, N. A. Schwadron, and G. Gloeckler, Observations of non-thermal properties of heavy ions in the solar wind, in *Acceleration and Transport of Energetic Particles Observed in the Heliosphere: Proc. of the ACE-2000 Symp.*, 5-8 Jan. 2000, Indian Wells, CA, AIP Conf. Proc., Vol. 528, edited by R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Möbius, and T. H. Zurbuchen, New York, AIP, p. 215, 2000.
143. Zurbuchen, T. H., S. Hefti, L. A. Fisk, G. Gloeckler, N. A. Schwadron, C. W. Smith, N. F. Ness, R. M. Skoug, D. J. McComas, and L. F. Burlaga, On the origin of microscale magnetic holes in the solar wind, *J. Geophys. Res.*, *106* (A8), 16,001-16,010, 2001.
144. Posner, A., T. H. Zurbuchen, N. A. Schwadron, L. A. Fisk, G. Gloeckler, J. A. Linker, Z. Mikic, and P. Riley, Nature of the boundary between open and closed magnetic field line regions at the Sun revealed by composition data and numerical models, *J. Geophys. Res.*, *106* (A8), 15,869-15,880, 2001.
145. Fisk, L. A., On the global structure of the heliospheric magnetic field, *J. Geophys. Res.*, *106* (A8), 15,849-15,858, 2001.
146. Fisk, L. A., and N. A. Schwadron, The behavior of the open magnetic field of the Sun, *Astrophys. J.*, *560* (1), 425-438, 2001.
147. Fisk, L. A., and N. A. Schwadron, Origin of the solar wind: Theory, *Space Sci. Rev.*, *97* (1/4), 21-33, 2001.
148. Lepri, S. T., Zurbuchen, T. H., Fisk, L. A., Richardson, I. G., Cane, H. V., and G. Gloeckler, Iron charge distribution as an identifier of interplanetary coronal mass ejections, *J. Geophys. Res.*, *106* (A12), 29,231-29,238, 2001.
149. Gloeckler, G., J. Geiss, and L. A. Fisk, Heliospheric and interstellar phenomena revealed from observations of pickup ions, in *The Heliosphere near Solar Minimum: The Ulysses Perspectives*, edited by A. Balogh, R. G., Marsden, and E. J. Smith, London, Springer-Praxis, pp. 287-326, 2001.
150. von Steiger, R., T. H. Zurbuchen, J. Geiss, G. Gloeckler, L. A. Fisk, and N. A. Schwadron, The 3-d heliosphere from the Ulysses and ACE Solar Wind Ion Composition experiments, *Space Sci. Rev.*, *97* (1/4), 123-127, 2001.
151. Reinhard, A. A., T. H. Zurbuchen, L. A. Fisk, S. T. Lepri, G. Gloeckler, and R. M. Skoug, Average composition signatures of CMEs in the solar wind, in *Solar and Galactic Composition*, ed. by R. F. Wimmer-Schweingruber, AIP Conf. Proc., Vol. 139, 2001.

152. Reinard, A. A., T. H. Zurbuchen, L. A. Fisk, S. T. Lepri, R. M. Skoug, and G. Gloeckler, Comparison between average charge states and abundances of ions in CMEs and the slow solar wind, in *Solar and Galactic Composition*, edited by R. F. Wimmer-Schweingruber, Joint SOHO/ACE workshop, Bern, Switzerland, March 6-9, 2003, AIP Conf. Proc. Vol. 598, p. 139, 2001.
153. Zurbuchen, T. H., P. L. Koehn, L. A. Fisk, G. Gloeckler, and K. Kabin, The Mercury plasma environment: MHD predictions and Mercury pickup ions, in *Workshop on Mercury: Space Environment, Surface, and Interior*, Proc. of the Wksp held at The Field Museum, 4-5 Oct., 2001, Chicago, IL. LPI Contribution No. 1097, Houston, TX, Lunar and Planetary Science Institute, p. 117, 2001.
154. Koehn, P. L., T. H. Zurbuchen, L. A. Fisk, and G. Gloeckler, Measuring the plasma environment at Mercury: The Fast Imaging Plasma Spectrometer, in *Workshop on Mercury: Space Environment, Surface, and Interior*, Proc. of the Wksp held at The Field Museum, 4-5 Oct., 2001, Chicago, IL. LPI Contribution No. 1097, Houston, TX, Lunar and Planetary Science Institute, p. 54, 2001.
155. Zurbuchen, T. H., L. A. Fisk, G. Gloeckler, and R. von Steiger, The solar wind composition throughout the solar cycle: A continuum of dynamic states, *Geophys. Res. Lett.*, *29* (9), 66-1, CiteID 1352, DOI 10.1029/2001GLO13946, 2002.
156. Koehn, P. L., T. H. Zurbuchen, G. Gloeckler, R. A. Lundgren, and L. A. Fisk, Measuring the plasma environment of Mercury: The Fast Imaging Plasma Spectrometer, *Meteoritics & Planetary Sci.*, *37* (9), 1173-1189, 2002.
157. Fisk, L. A., Acceleration of the solar wind as a result of the reconnection of open magnetic flux with coronal loops, *J. Geophys. Res.*, *108* (A4), pp. SSH 7-1, CiteID 1157, DOI 10.1029/2002JA009284, 2003.
158. Lynch, B. J., T. H. Zurbuchen, L. A. Fisk, and S. K. Antiochos, Internal structure of magnetic clouds: Plasma and composition, *J. Geophys. Res.*, *108* (A6), pp. SSH 6-1, CiteID 1239, DOI 10.1029/2002JA009591, 2003.
159. Fisk, L. A., Over the edge?, *Nature*, *426*, 21-22, 2003.
160. Geiss, J., G. Gloeckler, and L. A. Fisk, Interstellar gas inside the heliosphere, in *The Interstellar Environment of the Heliosphere*, International COSPAR Colloquium in Honour of Stanislaw Grzedzielski, 23 January 2001, Paris, France, edited by Dieter Breitschwerdt and Gerhard Haerendel, pp. 87-109, MPE Report 285, Garching, Germany, 2003.
161. Zurbuchen, T. H., and L. A. Fisk, Sources of the solar wind during the solar cycle, in *Stars and Suns: Activity, Evolution and Planets*, International Astronomical Union Symposium No. 219, 21-25 July 2003, Sydney, Australia, 2003.
162. Fisk, L. A., G. Gloeckler, T. H. Zurbuchen, J. Geiss, and N. A. Schwadron, Acceleration of the solar wind as a result of the reconnection of open magnetic flux with coronal loops, in *Solar Wind Ten: Proceedings of the Tenth International Solar Wind Conference*, edited by M. Velli, R. Bruno, and F. Malara, pp. 287-292, American Institute of Physics, 2003.
163. McComas, D. J., P. A. Bochsler, L. A. Fisk, H. O. Funsten, J. Geiss, G. Gloeckler, M. Gruntman, D. L. Judge, S. M. Krimigis, R. P. Lin, S. Livi, D. G. Mitchell, E. Möbius, E. C. Roelof, N. A. Schwadron, M. Witte, J. Woch, P. Wurz, and T. H. Zurbuchen, Interstellar Pathfinder – A mission to the inner edge of the interstellar medium, in *Solar Wind Ten: Proceedings of the Tenth International Solar Wind Conference*, edited by M. Velli, R. Bruno, and F. Malara, pp. 834-837, American Institute of Physics, New York, 2003.
164. Zurbuchen, T. H., L. A. Fisk, S. T. Lepri, and R. von Steiger, The composition of interplanetary coronal mass ejections, in *Solar Wind Ten: Proceedings of the Tenth*

International Solar Wind Conference, pp. 604-607, American Institute of Physics, New York, 2003.
165. Zurbuchen, T. H., P. Koehn, L. A. Fisk, T. Gombosi, G. Gloeckler, and K. Kabin, On the space environment of Mercury, *Adv. Space Res.*, *33*, 1884-1889, 2004.
166. Reinard, A. A., and L. A. Fisk, Reconnection of magnetic field lines near the solar surface during coronal mass ejection propagation, *Astrophys. J., 608*, 533-539, 2004.
167. Zurbuchen, T. H., G. Gloeckler, F. Ipavich, J. Raines, C. W. Smith, and L. A. Fisk, On the fast coronal mass ejections in October/November 2003: ACE-SWICS results, *Geophys. Res. Lett.*, *31*, L11805, doi:10.1029/2004GL019461, 2004.
168. Lynch, B. J., S. K. Antiochos, P. J. MacNeice, T. H. Zurbuchen, and L. A. Fisk, Observable properties of the breakout model for coronal mass ejections, *Astrophys. J.*, *617*, 589-599, 2004.
169. Fisk, L. A., Mesoscale variations in the heliospheric magnetic field and their consequences in the outer heliosphere, in *Physics of the Outer Heliosphere, Third IGPP Conf. Proc.*, eds. V. Florinski, N. V. Pogorelov, and G. P. Zank, AIP, Melville, NY, pp. 365-372, 2004.
170. Gloeckler, G., J. Geiss, and L. A. Fisk, Heating of pickup and solar wind ions at Jupiter's bow shock, in *Physics of the Outer Heliosphere*, *Third IGPP Conf. Proc.*, eds. V. Florinski, N. V. Pogorelov, and G. P. Zank, AIP, Melville, NY, pp. 201-206, 2004.
171. Zurbuchen, T. H., R. von Steiger, W. B. Manchester, and L. A. Fisk, Heliospheric magnetic field configuration at solar maximum conditions: Consequences for galactic cosmic rays, in *Physics of the Outer Heliosphere*, *Third IGPP Conf. Proc.*, eds. V. Florinski, N. V. Pogorelov, and G. P. Zank, AIP, Melville, NY, pp. 70-80, 2004.
172. Fisk, L. A., The open magnetic flux of the Sun 1: Transport by reconnections with coronal loops, *Astrophys. J.*, *626* (1), 563-573, 2005.
173. Fisk, L. A., The exploration of the heliospheric in three dimensions with Ulysses – a case study in international cooperation, *ISSI 10th Anniversary Book*, ed. J. Geiss, 2005.
174. Fisk, L. A., Journey into the Unknown Beyond, *Science*, *309*, 2016, 2005.
175. Gloeckler, G., L. A. Fisk, and L. J. Lanzerotti, Acceleration of solar wind and pickup ions by shocks, *Physics of Collisionless Shocks, Fourth IGPP Conf. Proc.*, eds. G. Li, G. P. Zank, and C. T. Russell., AIP Conf. Proc. 781, p252, 2005.
176. Fisk, L. A., The formidable task of developing a predictive capability of the space environment of the solar system, *Proceedings of the AIAA Space 2005 Conference*, AIAA-2005-6822, 2005.
177. Fisk, L. A., G. Gloeckler, T. Zurbuchen, Acceleration of low-energy ions at the termination shock of the solar wind, *Astrophys. J.*, 644, 631, 2006.
178. Fisk, L. A. and G. Gloeckler, Common spectral shape of accelerated ions in the quiet-time solar wind, *Astrophys. J. Letters*, 640, L79, 2006.
179. Fisk, L. A. and T. H. Zurbuchen, Distribution and properties of open magnetic flux outside of coronal holes. *J. Geophys. Res.*, 111, A09115, 2006.
180. Sokolov, I. V., Roussev, I. I., Fisk, L. A., Lee, M. A., Gombosi, T. I. & Sakai, J. I., A Revisited Diffusive Shock-Acceleration Theory, *Astrophys. J. Letters* 642, L81, 2006
181. Abramenko, V. I., Fisk, L. A. & Yurhyshyn, V. B., The Rate of Emergence of Magnetic Dipoles in Coronal Holes and Adjacent Quiet-Sun Regions, *Astrophys. J. Letters*, 642, L65, 2006.
182. Cohen, O., Fisk, L. A., Roussev, I. I. Toth, G. & Gombosi, T. I., Enhancement of Photospheric Meridional Flow by Reconnection Processes, *Astrophys. J.*, 645, 1537, 2006.
183. Gloeckler, G. & Fisk, L. A., Anisotropic Beams Upstream of the Termination Shock of the Solar Wind, *Astrophys. J. Letters*, 648, L63, 2006.

184. Gloeckler, G., L. A. Fisk, and L. J. Lanzerotti, Pickup ions upstream and downstream of shocks, *Proceedings of Solar Wind 11*, ESA SP-592, p107, 2006.
185. Fisk, L. A., and T. H. Zurbuchen, Distribution of open magnetic flux outside of coronal holes, *Proceedings of Solar Wind 11*, ESA SP-592, p227, 2006.
186. Geiss, J., Gloeckler, G., & Fisk, L. A., Interstellar Gas inside the Heliosphere, ISSI Science Report Series, ed. by V. V. Izmodenov & R. Kallenbach, in press, 2007.
187. Andrews, G. B., T. H. Zurbuchen, B. Mauk, H. Malcom, L. A. Fisk, G. Gloeckler, J. S. Kelley, P. L. Koehn, T. W. LeFevere, S. S. Livi, R. A. Lundgren, and J. M. Raines, The energetic particle and plasma spectrometer instrument on the MESSENGER spacecraft, *Rev. Sci. Instruments,* in press, 2007.
188. Fisk, L. A. & Gloeckler, G. Thermodynamic Constraints on Stochastic Acceleration in Compressional Turbulence, Proc. Nat. Acad. Sci., in press, 2007.
189. Fisk, L. A. & Gloeckler, G., Acceleration and Composition of Solar Wind Suprathermal Tails, Space. Sci. Rev., in press, 2007.
190. Gloeckler, G. & Fisk, L. A., Johannes Geiss' Investigations of Solar, Heliospheric and Interstellar Matter, Space Sci. Rev., in press, 2007.
191. Gilbert, J. A., Zurbuchen, T. H., & Fisk, L. A., A New Technique for Mapping Open Magnetic Flux from the Solar Surface into the Heliosphere, Astrophys. J., in press, 2007.