

Robert J. Leamon

Education 1994–1999 University of Delaware Newark, DE
Ph. D., Physics

- Thesis title: “Dissipation of Magnetic Fluctuations in the Solar Wind”
- Thesis advisor: Dr. N. F. Ness

1990–1994 Imperial College London, UK
B. Sc., Physics with a Year in Europe

- First Class Honours
- Third Year spent at l’Université de Paris-XI, Orsay, France

Research Interests Space Plasma Physics: Interplanetary Magnetic Field; MHD Turbulence; Heating of the Solar Wind and Corona; Magnetic Helicity; Magnetic Clouds & CMEs; Space Weather; Interpretation of Spacecraft Data.

Employment Oct. 2000–present Montana State University Bozeman MT
Post-Doctoral Scholar

- Writing graphical display & analysis routines for Yohkoh soft X-ray images
- Investigating the nature of coronal “sigmoids” & Coronal Mass Ejections; Coordination and correlation of solar and interplanetary data; Prediction of “Space Weather.”
- Supervision of students:
 - primary responsibility for two 10-week full-time undergraduate research experience projects (Brian Lundberg, U. Arizona, summer 2002; Sarah Jones, Dartmouth College, fall 2002), one manuscript in preparation;
 - assisting one MSU undergraduate (Zachary Blehm) with his senior thesis.

January–Sept. 2000 Bartol Research Institute Newark, DE
Post-Doctoral Fellow

- Writing extraction of spacecraft data, analysis & graphical display routines for ACE magnetic field experiment.
- Investigating the nature of the turbulent dissipation range, in the solar wind and solar corona

**Employment
(cont)**

1998–1999 University of Delaware Newark, DE
Graduate Research Assistant

- Thesis research involved analysis and computational modelling of high-frequency fluctuations of the interplanetary magnetic field, using WIND/MFI data.
- Helped investigate and diagnose the cause of high-frequency noise problems on the WIND/MFI instrument.
- Helped build magnetic shielding for fuel valves on the Advanced Composition Explorer (ACE).
- Wrote graphical display & analysis routines for ACE magnetic field data.

1994–1997 University of Delaware Newark, DE
Graduate Teaching Assistant

- Taught laboratory and discussion sections for Introductory Physics classes (Calculus-based, Algebra-based & Non-science major courses).
- Graded Exams.

**Refereed Journal
Publications**

- Leamon, R. J., M. K. Dougherty, D. J. Southwood, and P. L. Haynes, Magnetic nulls in the outer magnetosphere of Jupiter: Detections by Pioneer and Voyager spacecraft, *J. Geophys. Res.*, **100**, 1829, 1995.
- Southwood, D. J., M. K. Dougherty, R. J. Leamon, and P. L. Haynes, Origin and dynamics of field nulls in the Jovian magnetospheres, *Adv. Space Res.*, **16**, 177, 1995.
- Leamon, R. J., C. W. Smith, N. F. Ness, W. H. Matthaeus, and H. K. Wong, Observational constraints on the dynamics of the interplanetary magnetic field dissipation range, *J. Geophys. Res.*, **103**, 4775, 1998.
- Leamon, R. J., W. H. Matthaeus, C. W. Smith, and H. K. Wong, Contribution of cyclotron-resonant damping to kinetic dissipation of interplanetary turbulence, *Astrophys. J. Lett.*, **507**, 181, 1998.
- Leamon, R. J., C. W. Smith, and N. F. Ness, Characteristics of magnetic fluctuations within coronal mass ejections: The January 1997 event, *Geophys. Rev. Lett.*, **25**, 2505, 1998.
- Matthaeus, W. H., G. P. Zank, R. J. Leamon, C. W. Smith, D. J. Mullan, and S. Oughton, Fluctuations, dissipation and heating in the corona, *Space Science Reviews*, **87**, 269, 1999.
- Leamon, R. J., C. W. Smith, N. F. Ness, and H. K. Wong, Dissipation range dynamics: Kinetic Alfvén waves and the importance of β_e , *J. Geophys. Res.*, **104**, 22 331, 1999.
- Leamon, R. J., W.H. Matthaeus, C.W. Smith, G.P. Zank, D.J. Mullan, and S. Oughton, MHD Driven Kinetic Dissipation in the Solar Wind and Corona, *Astrophys. J.*, **537**, 1054, 2000.

**Journal
Publications
(cont)**

- Leamon, R. J., R. C. Canfield, and A. A. Pevtsov, Properties of magnetic clouds and geomagnetic storms resulting from eruption of coronal sigmoids, *J. Geophys. Res.*, **107**, 1234, 2002.
- Leamon, R. J., R. C. Canfield, Z. Blehm and A. A. Pevtsov, What is the role of the kink instability in eruption of X-ray sigmoids? *Astrophys. J. Lett.*, submitted, 2002.

**Refereed
Conference
Proceedings**

- Leamon, R. J., W. H. Matthaeus, C. W. Smith, and H. K. Wong, Considerations limiting cyclotron-resonant damping of cascading interplanetary turbulence and why the 'slab' approximation fails, in *Solar Wind Nine*, edited by S. R. Habbal, R. Esser, J. V. Hollweg, and P. A. Isenberg, p. 465. AIP, New York, 1999.
- Leamon, R. J., N. F. Ness, C. W. Smith, and H. K. Wong, Dynamics of the dissipation range for solar wind magnetic fluctuations, in *Solar Wind Nine*, edited by S. R. Habbal, R. Esser, J. V. Hollweg, and P. A. Isenberg, p. 469. AIP, New York, 1999.

**Invited
presentations**

- "Dynamics of the Solar Wind Dissipation Range," Leamon, R. J.; International Union of Radio Science – National Radio Science Meeting (Boulder), January 2000.
- "Kinetic Dissipation of the Interplanetary Turbulence Interaction with Cyclotron Waves, Kinetic Alfvén Waves and 2-D Structures," IAGA-IASPEI Joint Scientific Assembly (Hanoi, Vietnam), August 2001.
- "Spatial Transport and Heating of the Solar Wind by Dissipation of Turbulent Magnetic Fluctuations," (Presented on behalf of Charles W. Smith and William H. Matthaeus) IAGA-IASPEI Joint Scientific Assembly (Hanoi, Vietnam), August 2001.
- "Cascade and Dissipation in Solar Wind Turbulence," 43rd Annual Meeting of the APS Division of Plasma Physics (Long Beach, CA), October 2001.

**Seminars and
other conference
presentations**

- "Dynamics of the Solar Wind Dissipation Range at 1 AU," Leamon, R. J., C. W. Smith, N. F. Ness, W. H. Matthaeus and H. K. Wong; Spring Meeting of the American Geophysical Union (Baltimore), May 1997. (*Eos Transactions, American Geophysical Union*, **78 (No. 17)** Supplement, S251, 1997.)
- "Dynamics of the Solar Wind Dissipation Range at 1 AU, II: Oblique Waves and MHD Turbulence," Leamon, R. J., C. W. Smith, N. F. Ness, W. H. Matthaeus and H. K. Wong (presented by C. W. Smith); Fall Meeting of the American Geophysical Union (San Francisco), December 1997. (*Eos Transactions, American Geophysical Union*, **78 (No. 46)** Supplement, F552, 1997.)
- "Damping of Oblique Kinetic Alfvén Waves as the Cause of the Interplanetary Magnetic Field Dissipation Range," Leamon, R. J., C. W. Smith, N. F. Ness and H. K. Wong; Spring Meeting of the American

Geophysical Union (Boston), May 1998. (*Eos Transactions, American Geophysical Union*, **79 (No. 17)** Supplement, S272, 1998.)

Seminars and presentations (cont)

- “The Dynamics of Dissipation Range Fluctuations with Application to Cosmic Ray Propagation Theory,” Leamon, R. J., C. W. Smith and N. F. Ness; 26th International Cosmic Ray Conference (Salt Lake City), August 1999. Proceedings published by AIP.
- “Dynamics of the Solar Wind Dissipation Range for Magnetic Fluctuations,” Leamon, R. J., Space and Atmospheric Sciences Group weekly seminar, Los Alamos National Laboratory, August 1999.
- “Spectral Transfer, Cyclotron Sweep and Heating of the Solar Corona,” Leamon, R. J., W.H. Matthaeus, C.W. Smith, G.P. Zank, D.J. Mullan, and S. Oughton; Spring Meeting of the American Geophysical Union (Washington, DC), May 2000. (*Eos Transactions, American Geophysical Union*, **81 (No. 19)** Supplement, S360, 2000.)
- “Properties of Magnetic Clouds Resulting from Eruption of Coronal Sigmoids,” Leamon, R. J., R. C. Canfield, and A. A. Pevtsov; Spring Meeting of the American Geophysical Union (Boston), May 2001. (*Eos Transactions, American Geophysical Union*, **82 (No. 20)** Supplement, S312, 2001.)
- “What is the role of the kink instability in eruption of X-ray sigmoids?” Leamon, R. J., R. C. Canfield, Z. Blehm and A. A. Pevtsov; Spring Meeting of the American Geophysical Union (Washington DC), May 2002. (*Eos Transactions, American Geophysical Union*, **83 (No. 19)** Supplement, S264, 2001.)
- “Helicity of a magnetic cloud and its progenitor active region,” Lundberg, B. J., R. J. Leamon and R. C. Canfield, NSF SHINE Workshop (Banff, AB), August 2002.

Professional memberships

- 1994– Institute of Physics (UK)
- 1995– American Geophysical Union
- 1995– American Institute of Physics (associate member through AGU)
- 2001– American Physical Society (associate member through IoP)

Scholarships & Awards

- October 1990. Imperial College Entrance Scholarship: £200, awarded for having one of the top 60 A-level results of the entering class.
- August 1999. International Cosmic Ray Commission: \$1000 travel grant to attend the 26th ICR Conference, Salt Lake City, UT.

Other Activities

- Rugby:
Referee since October 1998, Grade C-2 awarded August 2000.
Scheduling Secretary, East Penn Rugby Referees’ Society, January–September 2000.
- Guardian, Custodian and Tour Guide, Laurel Hill Historic Mansion, Fairmount Park, Philadelphia, March 1999– September 2000.