

Nathan A. Schwadron

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A. Relevant Experience

Dr. Schwadron has been a member of CRaTER team since 2010, deputy PI since 2011 and PI since 2012. He does research on particle acceleration and propagation in solar and heliospheric physics, studies the interaction of radiation with materials, and has worked to understand how GCR radiation and Solar Energetic Particles interact with and chemically alter dust and lunar regolith. Dr. Schwadron has helped innovate new dosimetry methods and leads the DoSEN detector development, which lays the foundation for a new generation of lightweight active-readout dosimetry detectors sensitive to the full-spectrum of particle radiation and linear energetic transfer spectrum including neutrons. Dr. Schwadron is the PI for NASA/NSF/LWS Strategic Capability Earth-Moon-Mars Radiation Environment Module (EMMREM) and is the co-lead of the NSF/FESD Sun-2-Ice project that studies particle acceleration and radiation interactions from the Sun through the Earth system. Finally, Dr. Schwadron is the NASA/NSF/LWS strategic capability lead of the recently selected Chromosphere-Solar-Wind and Energetic Particle Acceleration (C-SWEPA) Model.

Dr. Schwadron leads two Science Operations Center: the Interstellar Boundary Explorer Mission Science Operations Center (2007 – present), and the 2011-present lead of Solar Probe Plus Integrated Science Investigation of the Sun (ISIS) Science Center (2011-present).

Dr. Schwadron has participated in a broad list of missions including: New Horizons, team member of the Solar Wind Around Pluto (SWAP) experiment (2005-present); Ulysses solar wind team member (2002 – 2010); Ulysses Solar Wind Ion Composition Spectrometer Team Member (1996 – 2002); Advanced Composition Explorer (ACE) solar wind team member (2005 – present); Wind data interpretation and analysis of pickup and suprathermal ions (1996 – 2000); Cassini data interpretation and analysis of pickup ions (2006 – present).

B. Education History

- Ph.D., Physics, University of Michigan, Ann Arbor, 1997
Thesis title: “Theoretical and Observational Studies of Ion Transport in the Heliosphere”
- B. A., Physics with honors, Oberlin College, 1990

C. Employment Record

2015-Present	Professor, University of New Hampshire, Durham
2014-2015	Assoc. Prof. with Tenure, University of New Hampshire, Durham
2010-2014	Assoc. Prof., University of New Hampshire, Durham
2005-Aug, 2010	Assoc. Prof., Boston University
2005	Staff Scientist, Southwest Research Institute, San Antonio
2003-2005	Principal Scientist, Southwest Research Institute, San Antonio
2002-2003	Senior Research Scientist, Southwest Research Institute, San Antonio
1998-2002	Assistant Research Scientist, University of Michigan
March-April, 1999	Senior Research Scientist, International Space Science Institute (ISSI), Bern, Switzerland
1996-98	Research Fellow, University of Michigan
1992-96	Research Assistant, University of Michigan
1990-92	Teaching Assistant, University of Michigan

D. Honors, Awards, and Other Recognition

1994-1996	National Aeronautics and Space Administration National Graduate Student Research Fellow
2001	University of Michigan, Department of Atmospheric, Oceanic and Space Science Outstanding Achievement in Research Award
2005	Ulysses Achievement Award – 15 Years in Orbit
2008	National Aeronautics and Space Administration Group Achievement Award to Nathan Schwadron as a member of the New Horizons Spacecraft Development Team
2009	One of the lead authors for “The Solar System Beyond Neptune”, which won first place in the cosmology/astronomy category of the American Publishers Awards for Professional and Scholarly Excellence (PROSE Awards)
2010	Outstanding Alumni Award, Dept of Atmospheric Oceanic and Space Science, University of Michigan
2011	NASA Group Achievement Award to the IBEX Science Team
2011	NASA Group Achievement Award to the LRO Mission Operations Team
2011	NASA Group Achievement Award to the Lunar Reconnaissance Orbiter (LRO) Exploration
2012	Elected AAAS Fellow for “outstanding contributions to NASA missions and to the theoretical and observational understanding of the space radiation environment, solar wind, and interstellar interactions”

E. Courses Taught

UNIVERSITY OF MICHIGAN, ANN ARBOR

Main Instructor for Introduction to Space Science (AOSS-335; enrollment 28, Sophomore/Junior/Senior Level Course taught to students in the College of Engineering), Winter Term, 2000

Overall course evaluation 4.08

Overall instructor evaluation 4.14

Participated in teaching two classes at Atmospheric Oceanic and Space Science Department (Space Plasma Physics, Space Science), 1998-2001.

BOSTON UNIVERSITY

- *Fall Semester, 2005*
 - GRS AS 866: Space Physics Seminar
 - 2 Contact Hours
 - Enrollment: 5 (~16 students attended who were not enrolled)
 - 1 Instructor
 - No Teaching Assistants or Graders
 - Overall course evaluation 4
 - Overall instructor evaluation 4
- *Spring Semester, 2006*
 - CAS AS 101 (B1): The Solar System
 - 4 Contact Hours
 - Enrollment: 51
 - 1 Instructor
 - 1 Teaching Assistant for the Lab Section (Chris Mendillo)
 - The Teaching Assistant helped with Grading
 - The course was a new preparation
 - Overall course evaluation 3.6
 - Overall instructor evaluation 3.8
- *Fall Semester, 2006*
 - CAS AS 202: Introduction to Solar, Planetary and Space Science
 - 4 Contact Hours
 - Enrollment: 14
 - 1 Instructor
 - 2 Teaching Assistants:
 - Michael Gully-Santiago ran night labs
 - Sean Lockwood ran day labs and helped with grading
 - The course was a new preparation
 - Overall course evaluation 4.2
 - Overall instructor evaluation 4.2
 - CAS AS 202 HP: Introduction to Solar, Planetary and Space Science (Honors Section)
 - 4 Contact Hours
 - Enrollment: 7
 - 1 Instructor
 - No Teaching Assistants
 - The course was a new preparation
 - Overall course evaluation 4.3
 - Overall instructor evaluation 4.6
- *Spring Semester, 2007*
 - CAS AS 101 (B1): The Solar System
 - 4 Contact Hours
 - Enrollment: 40

1 Instructor
2 Teaching Assistants:
 Carl Schmidt
 Brian Walsh
The Teaching Assistants helped with Grading
The course was not a new preparation
Overall course evaluation 4.3
Overall instructor evaluation 4.3

- *Fall Semester, 2007*
 - Bought out from teaching to spend time developing the Interstellar Boundary Explorer Science Operations Center at Boston University
- *Spring Semester, 2008*
 - GRS AS 786 (A1): The Sun and Heliosphere
 - 4 Contact Hours
 - Enrollment: 10
 - 1 Instructor
 - No Teaching Assistants
 - This course was newly developed and taught
 - Overall course evaluation 3.9
 - Overall instructor evaluation 4.2
 - GRS AS 866: Space Physics Seminar
 - 2 Contact Hours
 - Enrollment: 5 (~15 students attended who were not enrolled)
 - 2 Instructors (team taught with Harlan Spence)
 - No Teaching Assistants or Graders
 - No course evaluation
- *Spring Semester, 2009*
 - CAS AS 312: Stellar and Galactic Astrophysics (AS312)
 - 3 Contact Hours
 - Enrollment: 30
 - 1 Instructors
 - No Teaching Assistants or Graders
 - Overall course evaluation 3.75
 - Overall instructor evaluation 3.875
- *Spring Semester, 2010*
 - CAS AS 100: Cosmic Controversies (AS100)
 - Enrollment: 75
 - 1 Instructor
 - 1 Teaching Assistants, 2 Graders
 - Overall course evaluation 4.1
 - Overall instructor evaluation 4.37

UNH

- *Spring Semester, 2011*
 - UNH Physics 935, Graduate Statistical Physics

Enrollment: 9
1 Instructor
Overall rating of instructor 4.78

- *Fall Semester, 2011*
 - UNH Physics 806, Introduction to Physics Research
Enrollment: 15
2 Instructors
Overall rating of instructor 4.64
- *Spring Semester, 2012*
 - UNH Physics 935, Graduate Statistical Physics
Enrollment: 12
1 Instructor
Overall rating of instructor 4.5
 - UNH Physics 806, Introduction to Physics Research
Enrollment: 14
2 Instructors
Overall rating of instructor 4.33
- *Fall Semester, 2012*
 - UNH Physics 407, General Physics
Enrollment: 150
Overall rating of instructor 3.9
- *Fall Semester, 2013*
 - UNH Physics 939, Theoretical Mechanics Physics
Enrollment: 9
Overall rating of instructor: 5.0
 - UNH Physics 895, Introduction to Computational Research Tools
Enrollment: 7
Co-taught with Professor Raeder
Overall rating of instructor: 4.71
- *Fall Semester, 2014*
 - UNH Physics 939, Theoretical Mechanics Physics
Enrollment: 12
Overall rating of instructor: 3.7
- *Fall Semester, 2015*
 - UNH Physics 939, Theoretical Mechanics Physics
Enrollment: 10
Overall rating of instructor: 5.0

- *Spring Semester, 2015*
 - UNH Physics 407, General Physics I – Recitation Instructor
 - Enrollment: 40

F. Direction of Undergraduate Students

Jamison Passuite

Worked on the Student Interstellar Boundary Explorer, May 2005-May 2007

Brent Randol

Worked on the Student Interstellar Boundary Explorer, May 2006-May 2007

Brian Stuart

Worked on the Student Interstellar Boundary Explorer, May 2006-May 2007
UROP student (Fall 2006)

Julia Williams

UROP student, IBEX Education and Public Outreach Web-products, Summer 2006

Katy Goodrich

Working on the Student Interstellar Boundary Explorer, May 2007 – May 2009

Kris Maynard

Working on the Student Interstellar Boundary Explorer, May 2007 – May 2009

Jacob Siegel

Working on the Student Interstellar Boundary Explorer, May 2008 – May 2009

Kristina Hogstrom

Working on the Earth-Moon-Mars Radiation Environment Module, May 2008 – May 2009

Matt Stemkowski

Undergraduate student at UNH working on implications of solar wind composition, May 2011 – May 2012

Mike Leveille

Undergraduate student at UNH working on situational awareness modeling of the space radiation environment, May 2011-2012

Molly Goelzer

I have helped with Molly's research on the evolution of the interplanetary magnetic field, 2013-present. Chuck Smith has done the bulk of actual advising for Ms. Goelzer. Ms. Goelzer has been remarkably productive (lead 3-4 journal articles).

Evin O'Shea

Software for the ISIS SOC

G. Graduate Advising

Advisor for Christina Prested

Working on the Interstellar Boundary Explorer Mission (Modeling and Data Analysis), May 2006-2010. Christina has passed her comprehensive and oral exam. Completed Dissertation on Energetic Neutral Atom Imagine in the Heliosphere Graduated in 2010

Advisor for Penny Wu

Working on theoretical modeling and kinetic simulations for suprathermal ions at the termination shock, May 2006-2009. Penny defended her thesis in December, 2009. Graduated in 2009.

Advisor Kamen Kozarev

Working on theoretical modeling for the Earth-Moon-Mars Radiation Environment Module, Nov 2007-Aug, 2012. Kamen successfully defended his thesis in August, 2012 and is now the recipient of the Jack Eddy Fellowship.

Advisor for Josh French

Josh French left UNH in Summer, 2013
He is currently working as a high school instructor in Florida

Advisor for Colin Joyce

Projected Graduation Date, June 2016

Advisor for Philip Quinn

Projected Graduation Date, June 2017

Advisor for Fatemeh Rahmanifard

Projected Graduation Date, June 2017

Reading member at BU for Loren Anderson, Ritaban Chatterjee, Francesca D'Arcangelo, Nicholeen Viall, Penny Wu, Ingolfur Agustsson

Reading member at UNH for Lijia Guo

H. Undergraduate Advising

Typically advise 3-4 undergraduate students in the Physics Department

Post-Doc Supervision

Dr. Reka Winslow (starting work Nov, 2014)

Supervision

Dr. Andrew Jordan (Research Scientist)
Dr. Jon Niehof (Research Scientist)
Dr. Jody Wilson (Research Scientist)
Ms. Sonya Smith (Project Manager)
Mr. Ken Fairchild (Science Operations)

I. Grants Awarded

UNH

Project Title: DREAM2
PI Schwadron
Total Award Amount: \$130K/year
Award Start: July, 2014
Award End: July, 2018

Project/Proposal Title: Chromosphere-Solar Wind Acceleration Module
PI Schwadron
Total Award Amount: \$1.5M
Award Start: July, 2013
Award End: June, 2018

Project/Proposal Total: DoSEN
PI Schwadron
Source of Support: NASA/Office of Chief Technologist
Total Award Amount: 250K
Award Start: January, 2013
Award Stop: Dec, 2015

Project/Proposal Title: IBEX - Science Operations Center (ISOC)
PI Schwadron
Source of Support: SwRI
Total Award Amount: ~\$2 M
Award Start: Oct 2010
Award Stop: Dec 2015

Project/Proposal Title: Earth-Moon-Mars Radiation Environment Module (EMMREM)
PI Schwadron
Source of Support: NASA
Total Award Amount: \$300K

Award Start	Dec 2010
Award End	Mar 2013
Project/Proposal Title:	Cosmic Ray Telescope for the Effects of Radiation (CRaTER): Phase E
PI	Schwadron
CoPI	Spence
Source of Support:	NASA
Total Award Amount:	\$2,800,000 (~\$1 M total subcontracted to 5 institutions) 900K/yr Oct 2014-Sept 2016
Award Start	Mar 12
Award End	Feb 16
Project/Proposal Title:	Phase A - Solar Probe
Source of Support:	NASA
Total Award Amount:	\$200,000
Award Start	Dec 10
Award End	Nov 13
Project/Proposal Title:	Phase B - Solar Probe
Source of Support:	NASA
Total Award Amount:	\$300,000
Award Start	Dec 12
Award End	Nov 14
Project/Proposal Title:	Phase C/D - Solar Probe
Source of Support:	NASA
Total Award Amount:	\$500,000
Award Start	Nov 14
Award End	Oct 16
Project/Proposal Title:	FESD Proposal, Type 1- Sun to Ice: Impacts on Earth of Extreme Solar Events
Source of Support:	NASA
PI	Spence
CoPI	Schwadron
Total Award Amount:	\$5.5M (~300K/yr to UNH)
Award Start	October 11
Award End	September 16

BOSTON UNIVERSITY

1. Principal Investigator at Boston University, *Collaborative Research: SHINE--Dynamical Properties of Suprathermal Ions in the Three-Dimensional (3D)-Heliosphere*, \$120K for 3 yrs, NSF, 2005 – 2008 (ATM 0550905)

2. Principal Investigator, *The Power Source for Coronal Heating and Solar Wind Acceleration*, NASA SHP04-0000-0159, \$24.5 K for 1 year, 2005-6
3. Principal Investigator at Boston University for Subcontract through Southwest Research Institute, *The Boston University Student Interstellar Boundary Explorer Project*, \$850K from 2007-2008 (IBEX 9492-5). This project will be extended into phase E, 2008-2011, and the grant cost is under negotiation
4. Principal Investigator, NASA LWS Program, *The Earth-Moon-Mars Radiation Exposure Module* (EMMREM; NNX07AC15G S03), \$1M for 5 years (subject to renewal after year 3), 2006-2011

SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO TEXAS

5. Principal Investigator, *Implications of Near Solar Source Pickup Ions*, \$100K/yr for 3 yrs, 2001 - 2004.
6. Principal Investigator, *Observational Constraints for the Dynamic Open Magnetic Field of the Sun and its Link to Properties of the Solar Wind and the Heliospheric Magnetic Field*, 2002 – 2005, \$85/K for 3 years
7. Principal Investigator, *The Sources, Acceleration and Propagation of Pickup Ions in the Heliosphere*, SwRI Internal Research, 2002 – 2003, \$150K for 1 year.
8. Principal Investigator, Chromosphere-Solar Wind Interface Model, SwRI Internal Research, 2004-2005, \$150K for 1 year
9. Co-Investigator (PI Dave McComas), Interstellar Boundary Explorer, NASA Small Explorer Program, \$134M

UNIVERSITY OF MICHIGAN, ANN ARBOR

12. Principal Investigator, *Consequences of a New Heliospheric Magnetic Field Model Including Footpoint Motion*, NSF, 10/1/97 - 10/1/2000, \$197,987, Co-PI: Thomas Zurbuchen.
13. Co-Principal Investigator, *Energetic particle propagation in the new model for the heliospheric magnetic field*, NASA, 11/1/97 - 11/1/1999, \$120,196, PI - Thomas Zurbuchen.
14. Principal Investigator, *Consequences of a New Heliospheric Magnetic Field Model Including Footpoint Motion*, NSF, \$82K/yr for 3 years, 2001 - 2004.
15. Co-Principal Investigator, *Implications of Near Solar Source Pickup Ions*, \$100K/yr for 3 yrs, 2001 - 2004.
16. Co-Investigator, Comprehensive Solar-Terrestrial Environment Model for Space Weather Predictions, DOD MURI Program, \$1M/yr, 2001-2006.
17. Co-Investigator, *A Predictive Model for the Magnetic Field in the Heliosphere*, NASA Theory Guest Investigator, \$80K/yr, 2001-2004.
18. Co-Investigator, Solar Wind Structure in the Inner Heliosphere: Rationale for the Location of the Sentinel Mission, NASA SEC Guest Investigator, \$80K/yr, 2001-2004.

Current Hirsch Index: 43

Age adjusted Hirsch Index: 2.4

Citations: 7156

Reference: <https://scholar.google.com/citations?user=AWJb6g4AAAAJ&hl=en>

J. Publications (Refereed articles, **Schwadron in bold**, *Students in italics*)

1. Williams, L. L., **N. A. Schwadron**, J. R. Jokipii, T. I. Gombosi, A unified transport Equation for both Cosmic Rays and Thermal Particles, *Astrophys. J. Lett.*, 405, L79, 1993.
2. **Schwadron, N. A.**, and T. I. Gombosi, A unifying comparison of nearly scatter free transport models, *J. Geophys. Res.*, 99, 19,301, 1994.
3. 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, 2665-2668, 1995.
4. **Schwadron, N. A.**, L. A. Fisk, and G. Gloeckler, Statistical acceleration of interstellar pick-up ions in co-rotating interaction regions, *Geophys. Res. Lett.*, 23, 2871, 1996.
5. Adams, F., K. Freese, G. Laughlin, **N. A. Schwadron**, and G. Tarle, Constraints on the intergalactic transport of cosmic rays, *Astrophys. J.*, 491, 6, 1997.
6. Fisk, L. A., **N. A. 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, 93, 1997.
7. Zurbuchen, T. H., **N. A. Schwadron**, and L. A. Fisk, Direct evidence for a heliospheric magnetic field with large excursions in latitude, *J. Geophys. Res.*, 102, 24,175, 1997.
8. Fisk, L. A., **N. A. Schwadron**, and T. H. Zurbuchen, On the slow solar wind, *Space Sci. Rev.*, 86, 51 1998.
9. **Schwadron, N. A.**, A model for pickup ion transport in the heliosphere in the limit of uniform hemispheric distributions, *J. Geophys. Res.*, 103, 20,643, 1998.
10. Zurbuchen, T. H., L. A. Fisk, G. Gloeckler, and **N. A. Schwadron**, Element and isotopic fractionation in closed magnetic structures, *Space Sci. Rev.*, 85, 397, 1998.
11. Fisk, L. A., T. H. Zurbuchen, and **N. A. Schwadron**, On the coronal magnetic field: Consequences of large-scale motions, *Astrophys. J.*, 521, 868, 1999.
12. Fisk, L. A., **N. A. Schwadron**, and T. H. Zurbuchen, The acceleration of the fast solar wind by the emergence of new magnetic flux, *J. Geophys. Res.*, 104, 19,765, 1999.
13. Fisk, L. A., T. H. Zurbuchen, and **N. A. Schwadron**, Coronal hole boundaries and their interactions with adjacent regions, *Space Sci. Rev.*, 87, 43, 1999.
14. 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 2-3 May 1998 CME observed with SWICS on ACE, *Geophys. Res. Lett.*, 26, 157, 1999.
15. **Schwadron, N. A.**, L. A. Fisk, and T. H. Zurbuchen, Elemental fractionation in the slow solar wind, *Astrophys. J.*, 521, 859, 1999.
16. **Schwadron, N. A.**, G. Gloeckler, L. A. Fisk, J. Geiss, and T. H. Zurbuchen, The inner source for pickup ions, in *Solar Wind Nine*, edited by S. R. Habbal, R. Esser, J. V. Hollweg, and P. A. Isenberg, AIP Conf. Proc. 471, Woodbury, New York, p. 487, 1999.
17. **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, 535, 1999.

18. 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 Conf. Proc.*, edited by S. Habbal, Woodbury, NY, American Institute of Physics, p. 143, 1999.
19. Zurbuchen, T. H., L. A. Fisk, S. Hefti, and **N. A. Schwadron**, The new heliospheric magnetic field: Observational implications, in *Solar Wind Nine Conf. Proc.*, edited by S. Habbal, Woodbury, NY, American Institute of Physics, p. 87, 1999.
20. **Chottoo, K., N. A. Schwadron**, G. M. Mason, T. H. Zurbuchen, A. Posner, L. A. Fisk, G. Gloeckler D. C. Hamilton, A. B. Galvin, and M. R. Collier, Composition and spectral measurements of H⁺, He²⁺, and He⁺ in CIRs at 1 AU, *J. Geophys. Res.*, 105, 23107, 2000.
21. 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*, AIP Conf. Proc. #528, ACE-2000 Symposium, eds. R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Moebius, and T. H. Zurbuchen, p. 229, 2000.
22. Gloeckler, G., J. Geiss, **N. A. Schwadron**, L. A. Fisk, T. H. Zurbuchen, F. M. Ipavich, R. von Steiger, H. Balsiger, and B. Wilken, Interception of comet Hyakutake's ion tail at a distance of 500 million kilometers, *Nature*, 404, 576, 2000.
23. Gloeckler, G. L. A. Fisk, J. Geiss, **N. A. Schwadron**, and T. H. Zurbuchen, The elemental composition of inner source pickup ions, *J. Geophys. Res.*, 105, 7459, 2000.
24. 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*, AIP Conf. Proc. #528, ACE-2000 Symposium, eds. R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Moebius, and T. H. Zurbuchen, p. 221, 2000.
25. Popecki, M. A., T. H. Zurbuchen, R. M. Skoug, C. W. Smith, A. B. Galvin, M. A. Lee, E. Moebius, A. T. Bogdanov, G. Gloeckler, S. Hefti, L. M. Kistler, B. Klecker, and **N. A. Schwadron**, Simultaneous high Fe charge state measurements by solar energetic particle and solar wind instruments, in *Acceleration and Transport of Energetic Particles Observed in the Heliosphere*, AIP Conf. Proc. #528, ACE-2000 Symposium, eds. R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Moebius, and T. H. Zurbuchen, p. 139, 2000.
26. **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, 7465, 2000.
27. **Schwadron, N. A.**, and J. Geiss, On the processing and transport of inner source hydrogen, *J. Geophys. Res.*, 105, 7473, 2000.
28. **Schwadron, N. A.**, and T. Cravens, Implications of solar wind composition for cometary x-rays, *Astrophys. J.*, 554, 558, 2000.
29. Szego, 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. Mobius, U. Motschmann, V. D. Shapiro, B. Tsurutani, and G. Zank, Physics of mass loaded plasmas, *Space Sci. Rev.*, 94, No. 3/4, 429-671, 2000.
30. von Steiger, R., and **N. A. Schwadron**, Solar wind composition, in *High Energy Solar Physics: Anticipating HESSI*, edited by R. Ramaty and N. Mandzhavidze, ASP Conf. Series, Vol. 206, San Francisco, Astronomical Society of the Pacific, pp. 54-63, 2000.
31. 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, 27217, 2000.

32. 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*, eds. R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Moebius, and T. H. Zurbuchen, AIP Conf. Proc. #528, ACE-2000 Symposium, p. 215, 2000.
33. 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, 18,327, 2000.
34. Fisk, L. A., and **N. A. Schwadron**, Origin of the solar wind: Theory, *Space Science Reviews*, 97, 21-33, 2001
35. Fisk, L. A., and **N. A. Schwadron**, The behavior of the open magnetic field of the Sun, *Astrophys. J.*, 560, 1, 425, 2001.
36. Posner, A., T. H. Zurbuchen, **N. A. Schwadron**, L. A. Fisk, G. Gloeckler, J. A. Linker, Z. Mikic, and P. Riley, The origin of open magnetic field-lines at the Sun revealed by composition data and numerical models, *J. Geophys. Res.*, 106, 15,869, 2001.
37. Posner, A., **N. A. Schwadron**, and T. H. Zurbuchen, Relationship of co-rotating rarefaction regions outside 40 AU with solar observations: Heliospheric mass loading, *The Outer Heliosphere: The Next Frontiers*, Ed. K. Schere, H. Fichtner, H. J Fahr, E. Marsch, COSPAR Colloquia Series 11, Amsterdam, Pergamon Press, 315, 2001
38. 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, 16,001, 2001.
39. **Schwadron, N. A.**, An explanation for strongly underwound magnetic field in co-rotating rarefactions regions and its relationship to footpoint motion on the Sun, *Geophys. Res. Lett.*, Vol 29, No 14, doi: 10.1029/2002GL015028, 2002.
40. Murphy, N., E. J. Smith and **N. A. Schwadron**, Observations and implications of strongly underwound magnetic field in co-rotating rarefaction regions, *Geophys. Res. Lett.*, Vol 29, No 22, doi: 10.1029/2002GL015164, 2002.
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 - 139 . Reisenfeld, D. B., Janzen, P. H., Bzowski, M., Dayeh, M. A., Funsten, H. O., Fuselier, S., Kubiak, M. A., McComas, D. J., **Schwadron, N.**, and Sokol, J. M., ENA Time Variation in the IBEX skymaps and at the Poles, AGU Fall Meeting Abstracts, A2, 2014
 - 140 . Funsten, H. O., Demajistre, R., Frisch, P. C., Fuselier, S., Janzen, P. H., Livadiotis, G., McComas, D. J., Pittman, K. T., Reisenfeld, D. B., **and Schwadron, N.**, Profiles of the Ribbon: Systematic ENA Flux Features Within and Beyond the Central Ribbon, AGU Fall Meeting Abstracts, 4064, 2014
 - 141 . Christian, E. R., Funsten, H. O., McComas, D. J., and **Schwadron, N.**, Parallax

- Measurements of the Ribbon of ENA Emission, Current Results and Future Prospects, AGU Fall Meeting Abstracts, 4063, 2014
- 142 . Moebius, E., Bzowski, M., Frisch, P. C., Fuselier, S., Heirtzler, D., Kubiak, M. A., Kucharek, H., Lee, M. A., Leonard, T., McComas, D. J., **Schwadron, N.**, Sokol, J. M., Swaczyna, P., and Wurz, P., Local Interstellar Cloud Temperatures as Observed with IBEX, AGU Fall Meeting Abstracts, 4060, 2014
- 143 . Leonard, T., Moebius, E., Bzowski, M., Fuselier, S., Heirtzler, D., Kubiak, M. A., Kucharek, H., Lee, M. A., McComas, D. J., **Schwadron, N.**, and Wurz, P., Observing the Interstellar Medium Flow over the Past 6 Years with IBEX-Lo, AGU Fall Meeting Abstracts, 4058, 2014
- 144 . Swaczyna, P., Bzowski, M., Kubiak, M. A., Sokol, J. M., Moebius, E., Leonard, T., Heirtzler, D., Hlond, M., Banaszekiewicz, M., Witte, M., Wurz, P., Rodriguez, D., **Schwadron, N.**, Fuselier, S., McComas, D. J., and Kucharek, H., Interstellar He Parameters in Front of the Heliosphere: View from Ixex and Ulysses, AGU Fall Meeting Abstracts, 4056, 2014
- 145 . Wilson, J. K., **Schwadron, N.**, Spence, H. E., Case, A. W., Golightly, M. J., Jordan, A., Looper, M. D., Petro, N. E., Robinson, M. S., Stubbs, T. J., Zeitlin, C. J., Blake, J. B., Kasper, J. C., Mazur, J. E., Smith, S. S., and Townsend, L. W., Lunar Proton Albedo Anomalies: Soil, Surveyors, and Statistics, AGU Fall Meeting Abstracts, 3853, 2014
- 146 . Jordan, A., Stubbs, T. J., Wilson, J. K., **Schwadron, N.**, and Spence, H. E., Deep dielectric and surface charging of regolith in the Moon's permanently shadowed regions, AGU Fall Meeting Abstracts, 8, 2014
- 147 . Wilson, J. K., **Schwadron, N.**, Spence, H. E., Golightly, M. J., Case, A. W., Smith, S., Blake, J. B., Kasper, J., Looper, M. D., Mazur, J. E., Townsend, L. W., Zeitlin, C., and Stubbs, T. J., Detecting Low-Contrast Features in the Cosmic Ray Albedo Proton Map of the Moon, Lunar and Planetary Science Conference, 45, 2206, 2014

M. Invited Lectures and Presentations

INVITED TALKS AT CONFERENCES

1. **Schwadron, N. A.**, Transport of energetic particles in heliographic latitude by direct magnetic connection: evolution during the solar cycle, IAGA special session, Energetic Particles in the Heliosphere: Local and Interstellar Sources, Solar Cycle Dependence and 3D Structure, GA4.04/W/06-B5, 1999.
2. **Schwadron, N. A.**, Pickup ions as tools for probing the composition and physical state of the local interstellar cloud, IAGA special session Energetic Particles in the Heliosphere: Local and Interstellar Sources, Solar Cycle Dependence and 3D Structure, GA4.04/E/07-B5, 1999.
3. **Schwadron, N. A.**, The Neutral Environment Near the Sun, 2000 Spring AGU, Washington, D.C. (P51A-04; Mercury: Scientific Issues and Opportunities).
4. **Schwadron, N. A.**, Mass Loading in the Heliosphere, 2000 Spring AGU, Washington, D.C. (SH42B-02; Physics of Mass Loaded Plasmas).

5. **Schwadron, N. A.**, The Dynamic 3D Heliosphere, 2002 World Space Congress (COSPAR02-A-01913, The Heliosphere at Solar Maximum).
6. **Schwadron, N. A.**, The Sources, Acceleration and Transport of Pickup Ions in the Heliosphere, 2002 Fall AGU, San Francisco, C.A. (SH72B-04, Energetic Charged Particle Transport in the Heliosphere II)
7. **Schwadron, N. A.**, Constant Energy Source for Solar Wind, 2004 Sprint AGU, Montreal, Canada (SH13A-02, Fresh Perspectives in Solar-Heliospheric Science)
8. **Schwadron, N. A.**, Constant Energy Source for Solar Wind: Observations and Theory, Spring AGU, Montreal Canada, 2004, Abstract # SH14A-02
9. **Schwadron, N. A.**, The sources of suprathermal ions in the corona and interplanetary medium, SHINE workshop, July, 2005
10. **Schwadron, N. A.**, The structure of the heliospheric magnetic field, SHINE workshop, July 2005
11. **Schwadron, N. A.**, Relating the sub-Parker spiral structure of the heliospheric magnetic field to dynamic sources of solar wind at the Sun, SHINE workshop, July 2005
12. **Schwadron, N. A.**, The Global Structure of the Heliospheric Magnetic Field over the Solar Cycle, American Geophysical Union, Fall Meeting(abstract #SH24A-06), 2006
13. **Schwadron, N. A.**, Anomalous Cosmic Ray Acceleration at the Blunt Termination Shock, The Physics of the Inner Heliosheath: Voyager Observations, Theory, and Future Prospects, 5th Annual International Astrophysics Conference, 2006
14. **Schwadron, N. A.**, The Heliospheric Magnetic Field over the Solar Cycle, International Helioophysical Year Conference at Bad Honnef, Germany.
15. **Schwadron, N. A.**, C. Goodrich, H. Spence, L. Townsend, F. Cucinotta, M. Weyland, M. Golightly, M. Desai, A. Posner, D. Hassler, D. Krauss-Varban, J. Luhmann, J. Miller, B. Heber, T. Onsager, Earth-Moon-Mars Radiation Environment Module (EMMREM), Aerospace Conference, 2007 IEEE , vol., no., pp.1-10, 3-10 March 2007
16. **Schwadron, N. A.**, and D. J. McComas, The Interstellar Boundary Explorer Mission – Half a Year to Launch!, American Geophysical Research Union, Dec 2007.
17. **Schwadron, N. A.**, The Earth Moon Mars Radiation Environment Mode, The CCMC Annual Meeting in AeroCo, Nov, 2007.
18. **Schwadron, N. A.**, Coronal Loops as the Sources for Solar Wind, 2008 Joint Assembly, The Meeting of the Americas, American Geophysical Union, SH34B, Fifty Years of Solar Wind Research, Fort Lauderdale, Florida, 2008.
19. **Schwadron, N.A.**, K. Kozarev, L. Townsend, M.I. Desai, M.A. Dayeh, F. Cucinotta, D. Hassler, H. Spence, M. Pours, E. Wilson, R. Squier and M. Golightly. “The Earth-Moon-Mars Radiation Environment Module (EMMREM) – First Results.” Paper Presented at the SAE ICES, Savannah GA, July, 2009.
20. **Schwadron, N.A.**, K. Kozarev, L. Townsend, M.I. Desai, M.A. Dayeh, F. Cucinotta, D. Hassler, H. Spence, M. Pours, E. Wilson, R. Squier and M. Golightly. “The Earth-Moon-Mars Radiation Environment Module (EMMREM).” Paper Presented at the Space Weather Workshop, The Meeting of Science, Research, Applications, Operations, and Users, Boulder, Colo., April 2008.
21. **Schwadron, N. A.**, N. U. Crooker, M. Owens, O. Cohen, C. Smith, D. Connick, The role of CMEs in the solar cycle, SHINE, 2009.
22. **Schwadron, N. A.**, M. E. Hill, M. Desai, K. Kozarev, R. Squier, The evolution of energetic particle tails from 1 to 10 AU, SHINE, July, 2009

23. **Schwadron, N. A.**, M. E. Hill, M. Desai, K. Kozarev, R. Squier, The evolution of energetic particle tails from 1 to 10 AU, SHINE, July, 2009
24. **Schwadron, N. A.**, and EMMREM Team, Solar Proton Events, Lunar Science Workshop, Regents Park – JSC, Sept 22nd, 2009
25. Spence, H. E., Golightly, M., **Schwadron, N. A.**, Wilson, J. K., Case, A., Kasper, J. C., Blake, J., Looper, M. D., Mazur, J., Townsend, L., Zeitlin, C., Stubbs, T. J., and The Crater Science Team, An Overview of First-Year Results from the Lunar Reconnaissance Orbiter (LRO) Cosmic Ray Telescope for the Effects of Radiation (CRaTER) (Invited), AGU Fall Meeting Abstracts, 4, 2010
26. Moebius, E., Bochler, P. A., Bzowski, M., Funsten, H. O., Fuselier, S. A., Heirtzler, D., Kubiak, M. A., Kucharek, H., Lee, M. A., Leonard, T., McComas, D. J., Petersen, L., Saul, L. A., **Schwadron, N. A.**, Witte, M., Wu, X., and Wurz, P., Two Years of Interstellar Flow Observations with the Interstellar Boundary Explorer (IBEX) - Implications on the LIC Parameters and the Boundary (Invited), AGU Fall Meeting Abstracts, 8, 2010
27. **Schwadron, N.**, First Attempts to Explain Interstellar Boundary Explorer Observations, EGU General Assembly 2010, held 2-7 May, 2010 in Vienna, Austria, p.1067, 12, 1067, 2010
28. **Schwadron, N.**, Testing Models that Attempt to Explain the IBEX Ribbon, Fall AGU, 2011
29. **Schwadron, N. A.**, Discovering the Global Heliosphere, European Geophysical Union, April, 2012
30. **Schwadron, N.** and IBEX Team, Discovering the Global Heliosphere: The Interstellar Boundary Explorer Mission Charts the Outer Boundaries of Our Solar System and Beyond, EGU General Assembly Conference Abstracts, 14, 6653, 2012
31. **Schwadron, N. A.**, and IBEX Team, The Global Heliosphere and Its Place in the Galactic Medium Revealed By The Interstellar Boundary Explorer, COSPAR, Mysore, India, 2012
32. **Schwadron, N. A.**, and IBEX Team, Mapping the Outer Boundaries of Our Solar System and Beyond, COSPAR, Mysore, India, 2012
33. **Schwadron, N. A.**, and the IBEX Team, The Interstellar Magnetic Field of the Heliosphere, Fall AGU, 2012
34. **Schwadron, N. A.**, TeV Cosmic Ray Anisotropies in the Local Interstellar Medium, Fall AGU, 2012
35. **Schwadron, N. A.**, Earth Moon Mars Radiation Environment Module, LWS Workshop, Princeton, NJ, Sept 18-20, 2013
36. **Schwadron, N. A.**, Global Anisotropies in TeV Cosmic Rays Related to the Sun's Local Galactic Environment from IBEX, SH22A-02, San Francisco, Dec 10, 2013
37. **Schwadron, N. A.**, IBEX views the global structure of the heliosphere influenced by the interstellar magnetic field, SH13B-05, Dec 9, 2013
38. **Schwadron, N. A.**, IBEX views the global structure of the heliosphere influenced by the interstellar magnetic field, D1.1-0011-14, COSPAR, Moscow, July, 2014
39. **Schwadron, N. A.**, Spatial Retention of Pickup Ions Beyond the Heliopause to form the IBEX Ribbon, D1.2-0002-14, COSPAR, Moscow, July, 2014
40. **Schwadron, N. A.**, Global Anisotropies in TeV Cosmic Rays Related to the Sun's Local Galactic Environment and Heliotail from IBEX, D1.4-0007-14, COSPAR, Moscow, July, 2014
41. **Schwadron, N. A.**, Lunar Radiation Environment, B0.1-0004-14, COSPAR, Moscow, July,

2014

42. **Schwadron, N. A.**, Panelist on Radiation Effects, International Space Medicine Summit, Rice, Houston, TX June, 2014
43. **Schwadron, N. A.**, Increasing Biological Hazards from Solar Energetic Particles and Cosmic Rays, Space Weather Workshop, Boulder, CO, April 7-11, 2014
44. **Schwadron, N.**, McComas, D., Funsten, H., Zank, G., Christian, E., Frisch, P., Desiati, P., Jokipii, J., Mobius, E., and Adams, F., Global Anisotropies in TeV Cosmic Rays Related to the Sun's Local Galactic Environment and Heliotail from IBEX, 40th COSPAR Scientific Assembly. Held 2-10 August 2014, in Moscow, Russia, Abstract D1.4-7-14., 40, 2014
45. **Schwadron, N.**, IBEX views the global structure of the heliosphere influenced by the Interstellar Magnetic Field, 40th COSPAR Scientific Assembly. Held 2-10 August 2014, in Moscow, Russia, Abstract D1.1-11-14., 40, 2014
46. **Schwadron, N.** and McComas, D., Spatial Retention of Pickup Ions Beyond the Heliopause to form the IBEX Ribbon, 40th COSPAR Scientific Assembly. Held 2-10 August 2014, in Moscow, Russia, Abstract D1.2-2-14., 40, 2014
47. **Schwadron, N.**, Spence, H., and Wilson, J., Lunar radiation environment, 40th COSPAR Scientific Assembly. Held 2-10 August 2014, in Moscow, Russia, Abstract B0.1-4-14., 40, 2014
48. **Schwadron, N. A.**, Implications of the Worsening GCR Radiation Environment, Space Radiation Environment, Space Weather Week, Boulder CO, April, 2014
49. **Schwadron, N. A.**, Implications of the Worsening Space Radiation Panelist International Space Medicine Summit, July, 2014
50. **Schwadron, N.**, Mannucci, A. J., Antiochos, S. K., Bhattacharjee, A., Gombosi, T. I., Gopalswamy, N., Kamalabadi, F., Linker, J., Pilewskie, P., Pulkkinen, A. A., Spence, H. E., Tobiska, W. K., Weimer, D. R., Withers, P., Bisi, M. M., Kuznetsova, M. M., Miller, K. L., Moretto, T., Onsager, T. G., Roussev, I. I., and Viereck, R. A., Vision for the Future of LWS TR&T, AGU Fall Meeting Abstracts, 2, 2014
51. **Schwadron, N.**, Kasper, J. C., Mewaldt, R. A., Mobius, E., Opher, M., Spence, H. E., and Zurbuchen, T., Interstellar Mapping and Acceleration Probe (IMAP) - Its Time Has Come!, AGU Fall Meeting Abstracts, 1, 2014

INVITED TALKS AT MISSION REVIEWS

1. **Schwadron, N. A.**, The IBEX Science Operations Center, The IBEX Concept Study Site Visit, August, 2004, Orbital Sciences Corporation, Sterling, VA
2. **Schwadron, N. A.**, The IBEX Science Operations Center, Ground Segment Engineering Peer Review, April 3-5, 2007, Orbital Sciences Corporation, Sterling VA
3. **Schwadron, N. A.**, The IBEX Science Operations Center, Mission Operations Review, July 10-11, 2007, Orbital Sciences Corporation, Sterling VA
4. **Schwadron, N. A.**, The IBEX Science Operations Center, Flight Operations Review, August 26, 2008, Orbital Sciences Corporation, Sterling, VA

INVITED SEMINARS AND COLLOQUIA

1. **Schwadron, N. A.**, Heliospheric Physics, Colloquium, Oberlin College, April 1996.
2. **Schwadron, N. A.**, The North-South Asymmetry in Cosmic Rays, Seminar, UM/AOSS, Sep. 1996.
3. **Schwadron, N. A.**, Heliospheric Physics: Insights from the Ulysses Mission, Invited Talk, Science Research Club, U. Michigan, Ann Arbor, Nov. 7, 2000 (Anne Benninghoff).
4. **Schwadron, N. A.**, Plasma Dust Interactions in the Heliosphere, Colloquium, UM/AOSS, spring 2000.
5. **Schwadron, N. A.**, The Dynamic Open Field Model, Colloquium, UM/AOSS, spring 2000.
6. **Schwadron, N. A.**, Open Flux in the Heliosphere, Seminar, San Diego, Scientific Applications International Corporation (Z. Mikic, Linker and Riley), Feb. 2001.
7. **Schwadron, N. A.**, Open Flux in the Heliosphere, Seminar, Jet Propulsion Laboratory, Feb., 2001.
8. **Schwadron, N. A.**, Heliospheric Pickup Ion Populations, Seminar, Los Alamos National Lab (Dave McComas), March 2000.
9. **Schwadron, N. A.**, Acceleration of the Solar Wind Due to Emergence of New Flux, Colloquium, New Jersey Institute of Technology (Haimin Wang), September 24, 2001.
10. **Schwadron, N. A.**, The Dynamic Open Field Model, Colloquium, High Altitude Observatory, Boulder CO, (Sarah Gibson, Tom Holzer), November 28, 2001.
11. **Schwadron, N. A.**, The Dynamic 3D Heliosphere: Energetic Particle Sources and Implications, Colloquium, U. Arizona, Tucson, AZ (Randy Jokipii, Joe Giacalone), March 24, 2003.
12. **Schwadron, N. A.**, The Solar Wind Scaling Law, Boston University, Oct, 23, 2003
13. Stochastic Acceleration of the Seed Populations of Solar Energetic Particles, SHINE Workshop, Maui, 2005
14. **Schwadron, N. A.**, The Coronal Hole Boundary Layer, SHINE Workshop, Maui, 2005
15. **Schwadron, N. A.**, Favored Acceleration Locations at the Termination Shock, SHINE Workshop, Maui, 2005
16. **Schwadron, N. A.**, Sources and Composition of Solar Wind, Colloquium, U. New Hampshire, 2006.
17. **Schwadron, N. A.**, Diffusive Acceleration at the Blunt Termination Shock, Colloquium, Dartmouth U., 2006
18. **Schwadron, N. A.**, Where is the Anomalous Cosmic Ray Accelerator - the case for Diffusive Drift Acceleration at a Blunt Termination Shock, SHINE Workshop, 2006
19. **Schwadron, N. A.**, The Changing Global Structure of the Heliospheric Magnetic Field due to Footpoint Motions at the Sun, SHINE Workshop, 2006
20. **Schwadron, N. A.**, On the Sources of Suprathermal Ions, SHINE Workshop, 2006
21. **Schwadron, N. A.**, Diffusive Shock Acceleration at the Blunt Termination Shock, Seminar, Los Alamos National Lab, Invited by P. Gary, 2006.
22. **Schwadron, N. A.**, Discovering the Global Heliosphere, Dartmouth College Physics Seminar, March, 2008
23. **Schwadron, N. A.**, The Evolving Global Heliosphere, U. New Hampshire, Nov. 2011
24. **Schwadron, N. A.**, The pervasive influence of the LISM Magnetic Field on the Heliosphere, Dartmouth College Physics Seminar, Oct, 2012

25. **Schwadron, N. A.**, Has Voyager Crossed the Heliopause, Dartmouth College Physics Seminar, Feb, 2014
26. **Schwadron, N. A.**, The worsening galactic radiation environment and its implications, Dartmouth College, Jan, 2015

N. Professional Service

UNH, PHYSICS DEPT SERVICE

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|-----------------------------------|--|
| 2010-Spring 2012
(Chair, 2011) | Member of Physics Department Grad Admissions Committee |
| 2010-Spring 2012
Fall 2012 | Coordinator of the Physics Department Colloquium
Chair of the Physics Web Development Committee |
| 2014
Committee | Chair of Thermodynamic Section of Comprehensive Examination |

UNH, UNIVERSITY SERVICE

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| 2010-Spring 2012 | Member of UNH Faculty Development Committee |
| 2013 | UNH Writing Academy Faculty Mentor |
| 2013-14 | Member of Responsible Conduct of Research and Scholarly Activity Committee (RCR) |
| 2015 – present | Chair of Responsible Conduct of Research and Scholarly Activity Committee (RCR) |
| 2015-present | Member of the University Research Counsel |

PROFESSIONAL SERVICE, ADVISORY COMMITTEES & EDITORIAL BOARDS

- | | |
|--------------|--|
| 2002 | Member, National Aeronautics and Space Administration Sun-Earth Connections Roadmap Team |
| 2003-6 | Member, National Aeronautics and Space Administration Sun-Earth Connection Advisory Subcommittee (SECAS) |
| 2004 | Member, NASA Solar System Exploration Hazards Roadmap Subcommittee |
| 2004-5 | Co-Chair, NRC's Solar and Space Science Subcommittee on Priorities for Space Science Enabled by Nuclear Power and Propulsion (NUCLEAR) |
| 2005-6 | Member of Living with A Star Steering Group |
| 2006-8 | Member National Aeronautics and Space Administration Heliophysics Subcommittee (HPS) |
| 2007-present | Member of the Editorial Board of Space Science Reviews |
| 2007-8 | Member of the National Aeronautics and Space Administration Heliophysics Mission Planning Working Group |
| 2009 | Member of the Heliophysics Science and Education Public Outreach Forum |
| 2010-12 | Member of the NRC Decadel Survey Solar and Heliopsheric Physics Team |

2011-12 Member of the Living With a Star Steering Committee
2013-present Chair of the Living With a Star Steering Committee
2013-Present Member of the NRC Committee for Solar and Space Physics

PROFESSIONAL SERVICE, MEETING ORGANIZATION

1999 Organizer, IAGA special session entitled Energetic Particles in the Heliosphere: Local and Interstellar Sources, Solar Cycle Dependence and 3D Structure
2000 Organizer, AGU Spring Meeting special session SH31B entitled Plasma-dust interactions in the heliosphere
2001 Chair, AGU Spring Meeting special session, Abundance variations in the solar corona II
2001 Chair, AGU Fall Meeting Session, Solar Wind Acceleration
2003 Organizer, Working Group: Do accelerated particles fit into the big picture, ACE-RHESSI-Wind Workshop, Taos, NM
2005-present Lead-organizer, New England Space Science Consortium
2005 Organizer, New England Space Science Consortium Meeting 1: On the Origin of the Slow Solar Wind, Harvard Smithsonian Center for Astrophysics, Nov 2, 2005
2005 Lead organizer for the Interstellar Boundary Explorer Science Working Team Meeting, June 15, 2005
2006 Organizer, New England Space Science Consortium Meeting 2: transition from the Open to Closed Corona, MIT, January 4, 2006
2006 Organizer, New England Space Science Consortium Meeting 4: Near and Far: Connections between Space Science and Astronomy, Harvard Smithsonian Center for Astrophysics, Mar 1, 2006
2006 Organizer, New England Space Science Consortium Meeting 5: Comparative Aspects of Particle Acceleration and Reconnection, University of New Hampshire, April 5, 2006
2006 Organizer, New England Space Science Consortium Meeting 6: Space Weather, the Heliophysics Program and NASA's Lunar Initiative, Boston University, June 14, 2006
2006 Organizer, New England Space Science Consortium Meeting 7: Relationship between particle acceleration and magnetic reconnection, Boston University, Sep 12, 2006
2006 Organizer, New England Space Science Consortium Meeting 8: Partition of Energy During Magnetic Reconnection, Harvard Smithsonian Center for Astrophysics, October 10, 2006
2006 Lead organizer for the Interstellar Boundary Explorer Science Working Team Meeting, Honolulu, Hawaii, March 9-10, 2006
2006 Lead Organizer for the Science Working Team Meeting, Nov 8, 2006, Oxnard CA
2006 Co-Organizer International Symposium on Recent Observations and Simulations of the Sun-Earth System, Varna, Bulgaria, Sept 17-22, 2006
2006 Co-Organizer of International Heliophysical Year (IHY) Focus on the Outer Heliosphere
2006 Lead Organizer for the Earth-Moon-Mars Radiation Environment Module Science Working Team Meeting, Nov 18-19, 2006, Houston TX

- 2007 Lead Organizer for the Earth-Moon-Mars Radiation Environment Module Science Working Team Meeting, Sept 19, 2007, Boston University
- 2007 Organizer, New England Space Science Consortium Meeting 10: Comparative Aspects of Reconnection, Jan 9, 2007
- 2007 Organizer, New England Space Science Consortium Meeting 11 & 12: Joint Papers for the New England Space Science Consortium Special Issue, MIT & Boston University, April, 2007
- 2007 Organizer, New England Space Science Consortium Meeting 13: Comparative Aspects of Magnetic Reconnection, Harvard Smithsonian Center for Astrophysics, May 2, 2007
- 2007 Organizer, New England Space Science Consortium Meeting 14: Results of the New England Space Science Consortium Joint Study of Reconnection, MIT, June 7, 2007
- 2007 Lead organizer for the Interstellar Boundary Explorer Science Working Team Meeting, April, 2007, Bern, Switzerland
- 2007 Lead organizer for the Interstellar Boundary Explorer Science Working Team Meeting, November, 2007, Orbital Sciences Corporation, Sterling, VA
- 2008 Organizer, New England Space Science Consortium, Meeting 15: Comparative Aspects of Magnetic Reconnection, Boston University, Feb 15, 2008
- 2008 Organizer, New England Space Science Consortium, Meeting 16: Magnetic Reconnection, University of New Hampshire, Sept 15, 2008
- 2008 Organizer, New England Space Science Consortium, Meeting 17: Universal Processes in Solar/Stellar Winds and their Central Source, Harvard Smithsonian Center for Astrophysics, October 27, 2008
- 2008 Lead Organizer for the Interstellar Boundary Explorer Science Working Team Meeting, June, 2008, Boston University
- 2008 Lead Organizer for the Interstellar Boundary Explorer Science Working Team Meeting, October, 2008, Orbital Sciences Corporation, Sterling, VA
- 2010 Lead Organizer for NESSC Decadel Survey Heliophysics Townhall
- 2011 Lead Organizer for NESSC Meeting on Implications of Interstellar Neutral Atoms within the Heliosphere

PROFESSIONAL SERVICE, REFEREEING AND REVIEW BOARDS

- ~2-3 Review Boards annually for the National Aeronautics and Space Administration and the National Science Foundation.
- ~10 proposals refereed annually for the National Aeronautics and Space Administration and the National Science Foundation.
- ~10 manuscripts refereed annually for the Journal of Geophysical Research, Space Science Reviews, Geophysical Research Letters, The Astrophysical Journal and The Astrophysical Journal Letters

BOSTON UNIVERSITY, DEPT OF ASTRONOMY SERVICE

- 2006-2010 Graduate Admissions Coordinator
- 2007-2010 Member of Christina Prested's Oral Committee
- 2007-2010 Member of Penny Wu's Oral Committee

2007-2010 Member of Loren Anderson's Oral and Dissertation Committee
2007-2009 Member of Ritaban Chatterjee's Oral and Dissertation Committee
2007-2009 Member of Francesca D'Arcangelo's Oral and Dissertation Committee
2007-2008 Member of Nicholeen Viall's Oral Committee
2007-2009 Member of Sarah McGregors Oral and Dissertation Committee
2008-2011 Member of Ingolfur Agustsson Dissertation Committee

BOSTON UNIVERSITY, UNIVERSITY SERVICE

2006 Facilitator for the February 9th round table session on Responsible Conduct of Research
2007 Member of the Natural Sciences Curriculum Committee
2008-9 Chair of the Natural Sciences Curriculum Committee

O. Professional Memberships

Member of Sigma-Xi
Member of the American Geophysical Union
Fellow of the AAAS

P. Other Relevant Professional Accomplishments and Information

NASA MISSION INVOLVEMENT

- LRO/CRaTER PI
- Solar Probe Plus, ISIS SOC Lead
- Interstellar Boundary Explorer (IBEX), Co-I, IBEX Science Operations lead
- New Horizons, team member of the Solar Wind Around Pluto (SWAP) experiment
- Ulysses - solar wind team member
- Advanced Composition Explorer (ACE) - solar wind team member
- Wind - data interpretation and analysis of pickup and suprathermal ions
- Cassini - data interpretation and analysis of pickup ions