

Scot R. Elkington

Curriculum Vitae

Laboratory for Atmospheric and Space Physics
University of Colorado at Boulder
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Boulder, Colorado 80303

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Education

Ph.D. in Physics

Department of Physics and Astronomy

Thesis title: Simulating storm-time radiation belt dynamics

Advisor: Professor Mary K. Hudson

Relevant course work includes:

- Advanced classical electrodynamics
- Space plasmas and solar-terrestrial physics
- Magnetohydrodynamics
- Numerical methods in ordinary and partial differential equations

Dartmouth College

June 2000

B.Sc. in Physics, Mathematics minor

Department of Physics

Relevant course work includes:

- Applied mathematics and partial differential equations
- Graduate courses in atmospheric and space physics

Utah State University

June 1992

Research Experience

Research Scientist

Laboratory for Atmospheric & Space Physics

Research Topics:

- Physical models of magnetospheric phenomena
- Radial diffusion and transport of energetic particles
- Substorm injection processes

Boulder, Colorado

2003–present

Research Associate

Space Science Institute/LASP

Advisors: Dr. Paul Dusenbery, Professor Daniel N. Baker

Research Topics:

- Spectral characteristics of magnetospheric ULF waves
- Dynamics and trapping of plasma sheet electrons

Boulder, Colorado

2000–2003

Graduate Research Assistant

Dartmouth College Physics Department

Advisor: Professor Mary K. Hudson

Research Topics:

- MHD/particle simulation methods
- Resonant acceleration of radiation belt electrons
- Storm-time radiation belt dynamics

Hanover, New Hampshire

1994–2000

Research Assistant

Utah State University LIDAR Consortium

Advisor: Professor Vincent B. Wickwar

Research Topics:

- Rayleigh-Raman backscatter LIDAR techniques
- Spectral analysis of atmospheric gravity waves
- Upper atmospheric density and temperature characteristics

Logan, Utah

1992–1994

Educational Advising**Doctoral Research Advisor**

U. Colorado, Applied Mathematics

Thesis Title: Solar Wind Driving of Magnetospheric ULF Pulsations

(Supporting Advisor: Scot Elkington)

Seth Claudepierre

PhD. 7/2008

Doctoral Research Advisor

U. Colorado, Physics

Research Topic: Radiation belt interaction with VLF waves

(Supporting Advisor: Dan Baker)

James McCullough

PhD. candidate

Doctoral Dissertation Committee

U. Colorado, Aerospace Engineering

Research Topic: Forecast systems for Earth space radiation environment

Drew Turner

PhD. candidate

Doctoral Dissertation Committee

Dartmouth College, Physics & Astronomy

Thesis Title: Radial Diffusion of Radiation Belt Electrons in Three Dimensions

Kara Perry

PhD. 10/2004

Doctoral Dissertation Committee

U. Colorado, Aerospace Engineering

Research Topic: Statistical studies of plasma sheet electrons and the solar wind

Edward Burin Des Rozier

PhD. candidate

Master's Thesis Committee

U. Colorado, Astronomy & Planetary Science

Thesis Title: Energy Transfer in the Magnetosphere During Isolated Substorm Events

Alexa Halford

MSc. 4/2007

Teaching Experience**Teaching Assistant**

Dartmouth College Physics Department

Teaching duties:

- Graded papers for graduate and advanced-undergraduate courses, including Classical Electrodynamics, Plasma Physics, and Quantum Mechanics.
- Generated homework and solution sets for introductory physics courses.
- Taught laboratories sections for 1-3 introductory physics courses per year.

Hanover, New Hampshire

1994-1998

Teaching Assistant

USU Physics Department

Logan, Utah

1992-1994

Teaching duties:

- Taught physics recitation sections for undergraduate physics courses.
- Gave substitute lectures in regular class meetings.
- Generated and distributed solution sets for weekly assignments.
- Tutored at an individual level in the USU Physics Learning Center.

Laboratory Instructor

USU Physics Department

Logan, Utah

1989-1992

Teaching duties:

- Taught laboratory sections for calculus- and algebra-based introductory physics courses.
- Maintained teaching laboratories and set up equipment for weekly labs for lower division courses.

External Research Support

2008 GEO/ATM Magnetospheric Physics

“Geosynchronous High Energy Electron Specification and Analysis at Constant First Invariant”

PIs: Scot Elkington; U. Colorado; Jenn Gannon, USGS

NSF

2009-2010

2006 Heliophysics Guest Investigator Program

“Investigations of ULF Wave Structure in Earth’s Magnetosphere”

PI: Scot Elkington, U. Colorado

NASA

2007-2009

2004 LWS Targeted Research & Technology

“Radial Diffusion Coefficients for Use in Radiation Belt Models”

PI: Scot Elkington, U. Colorado

NASA

2006-2009

2004 Heliophysics Guest Investigator Program

“Global Characteristics of the Magnetospheric Substorm Injection Process”

PI: Scot Elkington, U. Colorado

NASA

2006-2008

2003 Geospace Environment Modeling Program

“GEM: Transport and Trapping of Energetic Plasma Sheet Electrons”

PI: Scot Elkington, U. Colorado

NSF

2004-2006

2007 Heliophysics Guest Investigator Program

“Investigations of the Ionospheric Source of the O+ Ring Current Population”

CoI (PI: Bill Peterson, U. Colorado)

NASA

2008-2009

NASA LWS Geospace Missions

“RBSP-ECT: The Radiation Belt Storm Probes Energetic Particle, Composition, and Thermal Plasma Suite”

CoI (PI: Harlan Spence, Boston U.)

NASA

2007-2013

NASA LWS Geospace Missions

“MORE/ORBITALS: Mission of Opportunity, Radbelt Explorer”

Project Scientist (PI: Dan Baker, U. Colorado)

NASA

2007

NSF Science and Technology Centers “CISM: The Center for Integrated Space Weather Modeling” CoI (PI: Jeff Hughes, Boston U.)	NSF 2000-2010
Cluster Guest Investigator Program “Flank Magnetopause Reconnection, the Sash, and Lobe Convection” CoI (PI: Stefan Eriksson, U. Colorado)	NASA 2004-2006
Graduate Student Research Programs “Storm-time Radiation Belt Dynamics” PI: Scot Elkington, Dartmouth College (Advisor: Mary Hudson)	NASA 1999-2000

Refereed Publications

- Elkington, S.R., A review of ULF interactions with radiation belt electrons, in *Magnetospheric ULF Waves: Synthesis and New Directions*, edited by K. Takahashi, P.J. Chi, R.E. Denton, and R.L. Lysak, vol. 169, p. 177, AGU Geophysical Monographs, AGU, Washington, D.C., 2006.
- Elkington, S.R., D.N. Baker, and M. Wiltberger, Injection of energetic ions during the 31 March 0630 substorm, in *The Inner Magnetosphere: Physics and Modeling*, edited by T. Pulkkinen, N.A. Tsyganenko, and R.H.W. Friedel, vol. 155, p. 147, AGU Geophysical Monographs, AGU, Washington, D.C., 2005.
- Elkington, S.R., M. Wiltberger, A.A. Chan, and D.N. Baker, Physical models of the geospace radiation environment, *J. Atmos. Solar Terr. Phys.*, 66, 1371, doi:10.1016/j.jastp.2004.03.023, 2004.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, Resonant acceleration and diffusion of outer zone electrons in an asymmetric geomagnetic field, *J. Geophys. Res.*, 108(A3), 1116, doi:10.1029/2001JA009202, 2003.
- Elkington, S.R., M.K. Hudson, M. Wiltberger, J.G. Lyon, MHD/Particle simulations of radiation belt dynamics, *J. Atmos. Solar-Terr. Phys.*, 64, 607, 2002.
- Elkington, S.R., *Simulating storm-time radiation belt dynamics*, Ph.D. dissertation, Department of Physics and Astronomy, Dartmouth College, 2000.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, Acceleration of relativistic electrons via drift-resonant interaction with toroidal-mode Pc-5 ULF oscillations, *Geophys. Res. Lett.*, 26, 3273, 1999.
- Claudepierre, S.G., M. Wiltberger, S.R. Elkington, and M.K. Hudson, Magnetospheric cavity modes driven by solar wind dynamic pressure fluctuations, *Geophys. Res. Lett.*, 2009 (in review).
- Claudepierre, S.G., S.R. Elkington, and M. Wiltberger, Solar wind driving of magnetospheric ULF waves: Pulsations driven by velocity shear at the magnetopause, *J. Geophys. Res.*, 113, A05218, doi:10.1029/2007JA012890, 2008.
- Sarris, T.E., W. Liu, K. Kabin, X. Li, S.R. Elkington, R. Ergun, R. Rankin, V. Angelopoulos, J. Bonnell, K.H. Glassmeier and U. Auster, Characterization of ULF Pulsations by THEMIS, *Geophys. Res. Lett.*, doi:10.1029/2008GL036732, 2009 (in press).
- Peterson, W.K., L. Andersson, B. Callahan, S.R. Elkington, R.W. Winglee, J.D. Scudder, and H.L.

- Collin, Geomagnetic activity dependence of O⁺ in transit from the ionosphere, *J. Atmos. Solar-Terr. Phys.*, 2009 (in press).
- Shprits, Y.Y., S.R. Elkington, N.P. Meredith, and D.A. Subbotin, Review of modeling of losses and sources of relativistic electrons in the outer radiation belt: 1 – Radial transport, *J. Atmos. Solar-Terr. Phys.*, 2008.
- Shprits, Y.Y., D.A. Subbotin, N.P. Meredith, and S.R. Elkington, Review of modeling of losses and sources of relativistic electrons in the outer radiation belt: 2 – Local acceleration and loss, *J. Atmos. Solar-Terr. Phys.*, 2008.
- Kabin, K., R. Rankin, I.R. Mann, A.W. Degeling, and S.R. Elkington, Polarization properties of the ULF waves in non-axisymmetric background magnetic fields, *Adv. Space Res.*, 2009 (in press).
- Baker, D.N., M.J. Wiltberger, R.S. Weigel, and S.R. Elkington, Present status and future challenges of modeling the Sun–Earth end-to-end system, *J. Atmos. Solar Terr. Phys.*, 69, 3, 2007.
- Fei, Y., A.A. Chan, S.R. Elkington, and M. Wiltberger, Radial diffusion and MHD-particle simulations of relativistic electron transport by ULF waves in the September 1998 storm, *J. Geophys. Res.*, 111, A12209, doi:10.1029/2005JA0112112006, 2006.
- Perry, K.L., M.K. Hudson, and S.R. Elkington, Incorporating spectral characteristics of Pc-5 waves into three dimensional radiation belt modeling and the diffusion of relativistic electrons, *J. Geophys. Res.*, 110, A03215, doi:10.1029/2004JA010760, 2005.
- Baker, D.N., S.R. Elkington, X. Li, and M.J. Wiltberger, Particle acceleration in the inner magnetosphere, in *The Inner Magnetosphere: Physics and Modeling*, edited by T. Pulkkinen, N.A. Tsyganenko, and R.H.W. Friedel, vol. 155, p. 73, AGU Geophysical Monographs, AGU, Washington, D.C., 2005.
- Wiltberger, M., S.R. Elkington, T. Guild, D.N. Baker, and J.G. Lyon, Comparison of MHD simulations of isolated and storm time substorms, in *The Inner Magnetosphere: Physics and Modeling*, edited by T. Pulkkinen, N.A. Tsyganenko, and R.H.W. Friedel, vol. 155, p. 271, AGU Geophysical Monographs, AGU, Washington, D.C., 2005.
- Eriksson, S., S.R. Elkington, T.D. Phan, S.M. Petrinec, H. Reme, M.W. Dunlop, M. Wiltberger, A. Balogh, R.E. Ergun, and M. Andre, Global control of merging by the IMF: Cluster observations of dawnside flank reconnection, *J. Geophys. Res.*, 109, A12203, doi:10.1029/2003JA010346, 2004.
- Onsager, T.G., A.A. Chan, Y. Fei, S.R. Elkington, J.C. Green, and H.J. Singer, The radial gradient of relativistic electrons at geosynchronous orbit, *J. Geophys. Res.*, 109, A05221, doi:10.1029/2003JA010368, 2004.
- Li, X., D.N. Baker, S.R. Elkington, M. Temerin, G.D. Reeves, R.D. Belian, J.B. Blake, H.J. Singer, W. Peria, and G. Parks, Energetic particle injections in the inner magnetosphere as a response to an interplanetary shock, *J. Atmos Solar Terr. Phys.*, 65, 233, 2003.
- Nakamura, R., J.B. Blake, S.R. Elkington, D.N. Baker, W. Baumjohann, and B. Klecker, Relationship between ULF waves and radiation belt electrons during the March 10, 1998 storm, *Adv. Space Res.*, 30(10), 2163, 2002.
- Hudson, M.K., S.R. Elkington, J.G. Lyon, M.J. Wiltberger, and M.R. Lessard, Radiation belt electron acceleration by ULF wave drift resonance: Simulations of 1997 and 1998 storms, in *Space*

- Weather*, P. Song, H.J. Singer and G.L. Siscoe, eds., Geophysical Monograph 125, pp. 289-296, American Geophysical Union, Washington, D. C., 2000.
- Hudson, M.K., S.R. Elkington, J.G. Lyon, C.C. Goodrich, Increase in relativistic electron flux in the inner magnetosphere: ULF wave mode structure, *Adv. Space Res.*, 25, 2327, 2000.
- Hudson, M., S.R. Elkington, J.G. Lyon, C.C. Goodrich, and T.J. Rosenberg, Simulation of radiation belt dynamics driven by solar wind variations, in *Sun-Earth Plasma Connections*, J.L. Burch, R.L. Carovillano, and S.K. Antiochos, eds., Geophysical Monograph 109, pp. 171-182, American Geophysical Union, Washington, D.C., 1999.
- Hudson, M.K., S.R. Elkington, J.G. Lyon, V.A. Marchenko, I. Roth, M. Temerin, J.B. Blake, M.S. Gussenhoven, and J.R. Wygant, Simulations of radiation belt formation during storm sudden commencements, *J. Geophys. Res.*, 102, 14087, 1997.
- Hudson, M.K., S.R. Elkington, J.G. Lyon, V.A. Marchenko, I. Roth, M. Temerin and M.S. Gussenhoven, MHD/Particle simulations of radiation belt formation during a storm sudden commencement, in *Radiation Belts: Models and Standards*, J.F. Lemaire, D. Heynderickx, and D.N. Baker, eds., Geophysical Monograph 97, pp. 57-62, American Geophysical Union, Washington, D. C., 1996.

Professional Presentations

Invited Talks

- Elkington, S.R., S.G. Claudepierre, C.-L. Huang, A. Unsal, and M. Wiltberger, *Characterizing magnetospheric ULF activity during storms driven by high speed solar wind*. Presented at the 37th COSPAR Scientific Assembly, Montréal, Quebec, July 2008.
- Elkington, S.R., S.G. Claudepierre, and M. Wiltberger, *Energetic particle transport in the inner magnetosphere: Main phase access of plasmashet electrons to the radiation belts*. Presented at the 15th Cluster Science Workshop, Puerto Santiago, Tenerife, Spain, March 2008.
- Elkington, S.R., S.G. Claudepierre, C.-L. Huang, and A.A. Chan, *Magnetospheric ULF activity as a function of solar wind conditions: implications for particle energization in the radiation belts*. Presented at the 2008 URSI meeting, Boulder, Colorado, January.
- Elkington, S.R., *Physical models of the near-Earth space radiation environment*. Seminar presented at the NOAA Space Weather Prediction Center, Boulder, Colorado, November 2007.
- Elkington, S.R., S.G. Claudepierre, and M. Wiltberger, *Particle thermalization in geospace: Solar wind/magnetosphere coupling through externally-driven ULF waves*. Presented at the NASA Living with a Star Science Workshop, Boulder, Colorado, September 2007.
- Elkington, S.R., A.A. Chan, B. Yue, and M. Wiltberger, *Coupling between the plasmashet and radiation belts: energetic particle transport in the inner magnetosphere*. Presented at the AOGS 4th Annual Meeting, Bangkok, Thailand, August 2007.
- Elkington, S.R., S.G. Claudepierre, S. Kanekal, A.A. Chan, and M. Wiltberger, *Characterizing ULF wave activity driven by high speed solar wind events*. Presented at the 2007 IUGG/IAGA General Assembly, Perugia, Italy, July.
- Elkington, S.R., A.A. Chan, B. Yue, and M. Wiltberger, *Flux variations in the radiation belts and the influence of coupling at the outer boundary*. Presented at the EGU General Assembly, Vienna, Austria, April 2007.

- Elkington, S.R., *Physical models of Earth's space radiation environment*. Colloquium presented to the University of Colorado Department of Applied Mathematics, Boulder, February 2007.
- Elkington, S.R., D.N. Baker, B. Yue, A.A. Chan, M. Wiltberger, and A. Aasnes, *Injection of plasmasheet electrons into the radiation belts*. Presented at the 2006 Western Pacific Geophysics Meeting, Beijing, China, July.
- Elkington, S.R., D.N. Baker, and M. Wiltberger *Substorm injection of energetic ions and electrons in the inner magnetosphere: MHD/particle simulations*. Presented at the International Conference on Substorms – 8, Banff, Canada, March 2006.
- Elkington, S.R., S.G. Claudepierre, and M. Wiltberger, *Radiation belt dynamics driven by interaction with ULF waves*. Presented at the “Workshop on Global Aspects of M/I Coupling”, Yosemite, California, February 2006.
- Elkington, S.R., *Space weather and the dynamics of the Earth's radiation belts*. Presented at the 2005 NCAR/ASP/HAO Summer Colloquium on Space Weather, Boulder, Colorado, June.
- Elkington, S.R., A.A. Chan, Y. Fei, and M. Wiltberger, *ULF waves and radial diffusion in the radiation belts*. Presented at the AGU Chapman Conference on ULF Waves, San Diego, California, March 2005.
- Elkington, S.R., *Radial transport in the radiation belts*. Tutorial presented at the “Workshop on Energetic Electron Radiation Belt Dynamics”, Hermanus Magnetic Observatory, Hermanus, South Africa, March 2005.
- Elkington, S.R., M. Wiltberger, A.A. Chan, and Y. Fei, *Radiation belt energization via interaction with ULF waves: MHD simulations of ULF activity*. Presented at URSI 2005, Boulder, Colorado, January.
- Elkington, S.R., M. Wiltberger, A.A. Chan, and Y. Fei, *Energy transfer from the solar wind to the outer zone radiation belts via ULF waves*. Presented at “Sun-Earth Connection Physics: The GeoImpact of CMEs, CIRs, and Ordinary Solar Wind”, Merida, Mexico, November 2004.
- Elkington, S.R., D.N. Baker, M. Wiltberger, Y. Fei, and A.A. Chan, *Physical models of the radiation belts: techniques, challenges, and unknowns*. Presented at Huntsville Modeling Workshop “Challenges to Modeling the Sun-Earth System”, Alabama, October 2004.
- Elkington, S.R., *What we need in a GGCM to describe the radiation belts*. Presented at the GEM 2004 Summer Meeting, Snowmass, Colorado, June.
- Elkington, S.R., *Energetic particle transport in the magnetosphere, waves, and the plasmasphere*. Seminar presented to HAO/NCAR Plasmaspheric Research Group, Boulder, Colorado, October 2003.
- Elkington, S.R., D.N. Baker, M. Wiltberger, A.A. Chan, and Y. Fei, *Coupling energy from the solar wind into the outer zone through ULF variations*. Presented at the IUGG 2003, Sapporo, Japan, July 2003.
- Elkington, S.R., D.N. Baker, A.A. Chan, Y. Fei, and M. Wiltberger, *Radial transport in the outer zone: ULF waves and the diffusion equation*. Presented at the IUGG 2003, Sapporo, Japan, July 2003.
- Elkington, S.R., *Transport in the radiation belts and the role of magnetospheric ULF waves*. Plenary tutorial presented at the GEM 2003 Summer Meeting, Snowmass, Colorado, June.

- Elkington, S.R., *Modeling transport and acceleration of energetic electrons in the outer zone radiation belt*. Seminar presented to the Space Physics Division, Los Alamos National Laboratory, New Mexico, February 2003.
- Elkington, S.R., D.N. Baker, A.A. Chan, Y. Fei, M.K. Hudson, and T.G. Onsager, *ULF waves and energetic electron dynamics in the outer zone*. Presented at the 2002 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., D.N. Baker, A.A. Chan, Y. Fei, M.K. Hudson, and M. Wiltberger, *Synergistic development of physical radiation belt models*. Presented to NASA Living With A Star Science Workshop, Johns Hopkins/Applied Physics Laboratory, Columbia, Maryland, November 2002.
- Elkington, S.R., D.N. Baker, A.A. Chan, Y. Fei, M.K. Hudson, and M. Wiltberger, *The plasma sheet as a source of outer zone electrons: physical space weather models and lessons learned from ISTP*. Presented at the 2002 Western Pacific Geophysics Meeting, Wellington, New Zealand, July.
- Elkington, S.R., *MHD/particle simulations of the near-Earth magnetotail*. Seminar presented to Department of Physics and Astronomy, Dartmouth College, Hanover, New Hampshire, April 2002.
- Elkington, S.R., *Particle simulations of the radiation belts*. Seminar presented to Department of Physics and Astronomy, Rice University, Houston, Texas, November 2001.
- Elkington, S.R., A.A. Chan, and M.K. Hudson, I.R. Mann, *Radial diffusion in a non-axisymmetric magnetic field: towards a generalized theory of radial diffusion*. Presented at the ISEC 2001 Conference on Radiation Belt Science and Technology, Queenstown, New Zealand, July 2001.
- Elkington, S.R., *Earth's trapped radiation environment: Understanding the dynamics of the Van Allen radiation belts*. Colloquium presented to the Department of Physics and Astronomy, Northwestern University, Chicago, Illinois, January 2001.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, *Transport and acceleration of radiation belt electrons through resonant interaction with magnetospheric ULF oscillations*. Presented at the First S-RAMP Conference, Sapporo, Japan, October 2000.
- Elkington, S.R., M.K. Hudson, J.G. Lyon, and A.A. Chan, *Modeling radiation belt injection and acceleration processes*. Presented at the NATO Advanced Study Institute on Space Storms and Space Weather Hazards, Crete, Greece, June 2000.
- Elkington, S.R., *Using MHD/Particle simulations to predict radiation belt dynamics during geomagnetic storms*. Seminar presented at NOAA/SEC, Boulder, Colorado, January 2000.
- Elkington, S.R., M.K. Hudson, and J.G. Lyon, *Energetic electrons and the January 1997 magnetic storm: simulations vs. observations*. Presented to the 6th Huntsville Modeling Workshop, Gunterville, AL, October 1998.

Contributed Talks

- Elkington, S.R., S.G. Claudepierre, M. Wiltberger, *Effect of externally-driven magnetospheric ULF variations on the radiation belts*. Presented at the 2008 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., *How well does radial diffusion describe transport in the radiation belts?* Seminar presented to LASP Magnetospheric Physics Group, September 2008.

- Elkington, S.R., T. Sarris, W. Yue, X. Li, R. Rankin, K. Kabin, and A. Degeling, *Polarization characteristics of ULF waves: covariant calculations vs. THEMIS observations*. Presented at the 2008 Inner Magnetospheric Coupling Workshop, Espoo, Finland, July.
- Elkington, S.R., A.A. Chan, B. Yue, and M. Wiltberger, *Plasmasheet electron injections during geomagnetic storms*. Presented at the 2008 Inner Magnetospheric Coupling Workshop, Espoo, Finland, July.
- Elkington, S.R., S.G. Claudepierre, C.-L. Huang, A. Unsal, and M. Wiltberger, *Solar wind driving of magnetospheric ULF waves: cavity modes?*. Presented at the 2008 Inner Magnetospheric Coupling Workshop, Espoo, Finland, July.
- Elkington, S.R., *Modeling energetic particle dynamics in Earth's Magnetosphere*. Seminar presented to LASP Magnetospheric Physics Group, February 2008.
- Elkington, S.R., S.G. Claudepierre, C.-L. Huang, and A.A. Chan, *Magnetospheric ULF activity as a function of solar wind conditions: toward a quantitative model of radial diffusion*. Presented at the 2007 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., A.A. Chan, B. Yue, and M. Wiltberger, *Does the CISM radiation belt model need to include an internal source?* Presented at the 2007 CISM All-Hands Meeting, Boston, MA, September.
- Elkington, S.R., A.A. Chan, B. Yue, and M. Wiltberger, *Stormtime plasmasheet access to the inner magnetosphere: evidence for an internal source*. Presented at the “Rarotonga Energetic Particle Workshop”, Cook Islands, August 2007.
- Elkington, S.R., A.A. Chan, and B. Yue, *Boundary conditions and fluxes in the outer radiation belts: Particle injections from the plasmasheet*. Presented at the 2006 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., *Physical radiation belt models*. Presented at the 2006 CISM All-Hands Meeting, Boston, MA, September.
- Elkington, S.R. and M. Wiltberger *Plasmasheet dynamics and loss of particles from the radiation belts via radial diffusion*. Presented at the GEM 2006 Summer Meeting, Snowmass, Colorado, June.
- Elkington, S.R., *What we need to know to understand radial diffusion in the Earth's Magnetosphere*. Seminar presented to LASP Magnetospheric Physics Group, March 2006.
- Elkington, S.R., M. Wiltberger, D.N. Baker, *Convective injection of radiation belt electrons: a comparison of two storms*. Presented at the 2005 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., D.N. Baker, and M. Wiltberger, *Boundary conditions on the radial diffusion problem, and diffusion as a loss process*. Presented at the GEM 2005 Summer Meeting, Santa Fe, NM, June.
- Elkington, S.R., *Transport in the radiation belts and global circulation models*. Presented at the GEM 2005 Summer Meeting, Santa Fe, NM, June.
- Elkington, S.R., M. Wiltberger, A.A. Chan, and Y. Fei, *Investigating the origin and characteristics of ULF waves driven by the solar wind*. Presented at the 2004 Fall AGU Meeting, San Francisco, California, December.

- Elkington, S.R., *2d and 3d electron radiation belt modules in CISM*. Presented at the 2004 CISM All-Hands Meeting, Boston, MA, September.
- Elkington, S.R., A.A. Chan, and Y. Fei, *Wave propagation, local time effects and implications for particle energization*. Presented at the First Annual AOGS Meeting, Singapore, July 2004.
- Elkington, S.R., *Wave propagation, local time effects, and particle energization*. Presented at the GEM 2004 Summer Meeting, Snowmass, Colorado, June.
- Elkington, S.R., M. Wiltberger, and D.N. Baker, *Analysis of a substorm particle injection: 0630 UT, March 31, 2001*. Presented at the 2004 Spring AGU Meeting, Montreal, Canada, May.
- Elkington, S.R., *Simulating impulsive injections in the radiation belts*. Seminar presented to LASP Magnetospheric Physics Group, February 2004.
- Elkington, S.R., A.A. Chan, Y. Fei, M. Wiltberger, *The global ULF environment on 09/24/98, and effect on energetic electron dynamics*. Presented at the 2003 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., *Simulations of the radiation belts*. Presented at the CISM All Hands Meeting, Boston, MA, September 2003.
- Elkington, S.R., A.A. Chan, Y. Fei, M. Wiltberger, *Mode structure of ULF waves in the magnetosphere and implications for energetic particle acceleration*. Presented at ISEC 2003, Toulouse, France, August.
- Elkington, S.R., D.N. Baker, M. Wiltberger, *31 March 2001 0630 substorm: injection of energetic ions and electrons*. Presented at the Chapman Conference on Physics and Modeling of the Inner Magnetosphere, Helsinki, Finland, August 2003.
- Elkington, S.R., A.A. Chan, Y. Fei, *ULF mode structure in the magnetosphere: MHD*. Presented at the GEM 2003 Summer Meeting, Snowmass, Colorado, June.
- Elkington, S.R., *Cluster and global simulations of the magnetosphere*. Presented at the Cluster Science Working Team Meeting, Boulder, Colorado, February 2003.
- Elkington, S.R., D.N. Baker, M. Wiltberger, and M.K. Hudson, *Storm-time trapping of energetic plasma sheet electrons*. Presented at the GEM 2002 Summer Meeting, Telluride, Colorado, June.
- Elkington, S.R., A.A. Chan, and Y. Fei, *Characteristics of radial diffusion in the outer zone*. Presented at the GEM 2002 Summer Meeting, Telluride, Colorado, June.
- Elkington, S.R., *MHD/particle simulations of the magnetotail*. Seminar presented to LASP Magnetospheric Physics Group, March 2002.
- Elkington, S.R., D.N. Baker, X. Li, M.K. Hudson, and M. Wiltberger, *Storm-time injection and trapping of plasma sheet particles in the outer zone: March 31, 2001*. Presented at 2001 Fall AGU Meeting, San Francisco, California.
- Elkington, S.R., *MHD simulations of the Earth's magnetosphere*. Seminar presented to LASP Magnetospheric Physics Group, October, 2001.
- Elkington, S.R., A.A. Chan, and M.K. Hudson, *Enhanced radial diffusion of energetic electrons in a compressed magnetic field*. Presented at the GEM 2001 Summer Meeting, Snowmass, Colorado, June.

- Elkington, S.R., M.K. Hudson, and A.A. Chan, *Enhanced radial diffusion of outer zone electrons in an asymmetric geomagnetic field*. Presented at the 2001 Spring AGU meeting, Boston, MA, May.
- Elkington, S.R., P. Buehler, D.F. Moorer, D.N. Baker, M.K. Hudson, M. Wiltberger, and J.F. Fennell, *Data assimilation in initializing MHD/particle simulations of the radiation belts*. Presented at the 2000 Fall AGU Meeting, San Francisco, California, Dec.
- Elkington, S.R., M.K. Hudson, J.B. Blake, and A.A. Chan, *Energetic electron response during the geomagnetic storm of September 24-26, 1998*. Presented at the First S-RAMP Conference, Sapporo, Japan, Oct 2000.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, *Resonant diffusion of outer zone electrons*. Presented at the NATO Advanced Study Institute on Space Storms and Space Weather Hazards, Crete, Greece, June 2000.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, *Enhanced radial diffusion of outer zone electrons through resonant interaction with magnetospheric ULF waves*. Presented at the 2000 Spring AGU Meeting, Washington, D.C., May.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, *Resonant diffusion of radiation belt particles in the ULF frequency continuum*. Presented at the 1999 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, *Acceleration and radial transport of relativistic electrons via global Pc-5 ULF waves*. Presented at IUGG-99, Birmingham, UK, July 1999.
- Elkington, S.R., M.K. Hudson, and A.A. Chan, *Resonant acceleration of magnetospheric electrons via Pc-5 ULF oscillations*. Presented at the 1999 Spring AGU Meeting, Boston, MA, June.
- Elkington, S.R., M.K. Hudson, and J.G. Lyon, *Simulating energetic electron acceleration during the January 10, 1997 magnetic storm: the role of magnetospheric ULF oscillations*. Presented at the ISTP Science Workshop, NASA/Goddard Space Flight Center, Maryland, April 1998.
- Elkington, S.R., M.K. Hudson, and J.G. Lyon, *Storm-time convection of plasma sheet electrons into the outer radiation belt*. Presented at the 1998 Fall AGU Meeting, San Francisco, California, December.
- Elkington, S.R., M.K. Hudson, J.G. Lyon, *Global simulations of the radiation belt response to the magnetic storm of January 10-11, 1997*. Presented at the GEM/ISTP Conference, Yosemite, California, February 1998.
- Elkington, S.R., M.K. Hudson, J.G. Lyon, *Acceleration of relativistic electrons during storm sudden commencement*. Presented at the GEM 1997 Summer Meeting, Snowmass, Colorado, June.

Technical Skills

- Broad background in numerical techniques and analysis.
- Programming experience in Fortran77, IDL, Fortran90, C, BASIC, Pascal, and 6502 assembly language. Additional experience with UNIX streaming and scripting languages, including sed, perl, and TCL/TK.
- Solid foundation in programming both parallel and vector supercomputer architectures, including local Beowulf clusters (parallel), the Cray T3D and T3E (parallel), IBM SP-2 (paral-

lel), and the Cray T90, C90, and J90s (vector). Parallel programming implementations have included MPI, PVM, and CRAFT parallelization techniques.

- Ability to run Lyon-Fedder-Mobarry MHD code, simulating magnetospheric conditions based on real or contrived solar wind conditions.

Departmental Service

LASP Space Plasmas Group Seminar Laboratory for Atmospheric and Space Physics, U. Colorado	2005-2008
Computational Service Advisory Committee (CSAC) Laboratory for Atmospheric and Space Physics, U. Colorado	2004-present
Visiting Scientist Selection Committee Laboratory for Atmospheric and Space Physics, U. Colorado	2005-present
Beowulf Cluster Definition Committee Laboratory for Atmospheric and Space Physics, U. Colorado	2003-2004

Recent Synergistic Activities

- Co-Organizer, sessions “Expanding RBSP science returns using complementary multipoint measurements” (with Ian Mann) and “Aspects of radial transport in the radiation belts” (with Sasha Ukhorskiy) at 2008 Radiation Belt Storm Probes Science Working Group Meeting.
- Co-Organizer, session “Combining models and observations in the inner magnetosphere” at 2008 Inner Magnetosphere Coupling Workshop, Espoo, Finland, July (with Mary Hudson).
- Presented public outreach talk *Research Careers in Space Physics* at the Eldorado Middle School, Colorado, October 2007.
- Participated as a student mentor in the 2007 Research Experience for Undergraduates (REU) Program at the University of Colorado (advisee: Michael Panniccia, FIT).
- Session Chair, *Radiation Belt and Ring Current Dynamics During Magnetic Storms and Substorms and Heavy Ions and Multiscale Processes in the Magnetosphere*, 2006 Western Pacific Geophysics Meeting.
- Session Chair, *The Ionosphere & MI Coupling* at ICS-8, Banff, Canada.
- Session Chair, *Inner Magnetosphere/Storms: Electron variability caused by radial diffusion*, 2005 GEM Summer Workshop.
- Session Chair, *GGCM-IM/S Joint Session: Theory and Modeling*, 2004 GEM Summer Workshop.
- Session Chair, *Relativistic Electrons in the Earth’s Inner Magnetosphere: Observations, Models, and Space Weather Implications* (SM31B), Spring AGU, 2004.
- Session Chair, *Radiation Belts and the Inner Magnetosphere* (SM41C), Fall AGU, 2003.
- Session Chair, *ULF waves and electron acceleration*, 2003 GEM Summer Workshop.
- Session chair, *Radiation Belt Dynamics and Modeling* (SM52A), Fall AGU, 2001.
- Served on the Energetic Particle Symposium Committee for the First S-RAMP conference in Sapporo, Japan, October 2000.

- Participated in public outreach presentation of SSI's "Electric Space" exhibit, Twin Peaks Mall, Longmont CO, April 2000.
- Judged student papers: Fall AGU, 2001, 2002, 2003, 2004, 2006, 2008; Spring AGU 2004.
- Served on numerous NASA (2001, 2003, 2004, 2006, 2007) and NSF (2005) proposal review panels.
- Served as external reviewer for numerous journal submissions and grant proposals.

Professional Organizations

- Member, American Geophysical Union 1998-present
- Vice President, Society of Physics Students USU 1991-1992
- Member, Society of Physics Students, USU 1990-1992

Recent Collaborators

Arne Asnes, Dan Baker, Anthony Chan, Bin Yue, Chia-Lin Huang, Konstantin Kabin, Shrikanth Kanekal, Xinlin Li, Ian Mann, Jonathan Rae, Robert Rankin, Theodore Sarris, Harlan Spence, Michael Wiltberger.

Graduate and Postdoctoral Advisors

Mary Hudson, Dartmouth College
 Paul Dusenbery, Space Science Institute
 Dan Baker, LASP/CU