Robert Ergun

Curriculum Vitae

Affiliation

Department of Astrophysical and Planetary Sciences & Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO 80303, USA. ree@lasp.colorado.edu

Education

1974 B.A., Mathematics and Physics, Cornell University.
1989 Ph.D., Physics, University of California, Berkeley.

Current Position

2006- Professor, Department Astrophysical and Planetary Sciences & Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder

Recent Appointments

2015-2017 Associate Chair, Department Astrophysical and Planetary Sciences, University of Colorado, Boulder.
2001-2003 Associate Chair, Department Astrophysical and Planetary Science, University of Colorado, Boulder.
2000-2006 Associate Professor, Department Astrophysical and Planetary Sciences, University of Colorado, Boulder.
1998-1999 Visiting Associate Professor, Department of Engineering, Brown University.
1994-1999 Senior Fellow, Space Sciences Laboratory, University of California, Berkeley.
1998-1999 Associate Research Physicist, Space Sciences Laboratory, Univ. of CA, Berkeley.
1989-1998 Assistant Research Physicist, Space Sciences Laboratory, Univ. of CA, Berkeley.

Major Experimental Programs

2022- Instrument Scientist, Atmospheric Electrodynamics Probe for Thermal Plasma, *Global Dynamic Constellation*, NASA.
2010- Co-investigator, Fields Instrument, *Solar Probe Plus*, NASA.
2008- Co-investigator, Langmuir probe and Waves Instrument. *MAVEN*, NASA.
2006-2021 Co-investigator, electric field signal processing design and development. *RBSP*, the *Radiation Belt Storm Probes*, Electric Field and Waves Instrument, NASA.
2003- Axial Double Probe Lead, *MMS*, the *Magnetospheric Multiscale Mission*, NASA.
2003- Co-investigator, *JUNO*, the Jupiter Polar Orbiter, NASA.
2002- Co-investigator, Electric field instrument, *THEMIS*, NASA.
2000-2013 Co-investigator, *STEREO/WAVES*, NASA.
1989-2010 Co-investigator, electric field instrument lead, *Fast Auroral Snapshot* explorer, NASA.

Awards

2019 NASA Distinguished Public Service Medal
2013 AGU Fellow
1994-2019 Awarded eleven NASA Group Achievement Awards

Teaching

2000 Instructed 42 classes ranging from graduate-level (Plasma Astrophysics; Magnetospheres; seminars), upper level undergraduate (Solar and Space Physics; Scientific Data Analysis and Computing), courses for physics and astronomy majors (Stars and Galaxies; Planetary Science), and large-lecture astronomy classes.
1999-2000 Instructed two terms of Electricity and Magnetism at Brown University.
1998-1999 Instructed undergraduate, upper-level, Introduction to Plasma Physics and the University of California at Berkeley.

Graduate and Postdoctoral Advising

2000- Graduate student advising at University of Colorado: Dr. Christopher Cully (Professor, University of Calgary), Dr. Danial Main (Professor, John Brown University, Arizona), Dr. Licia Ray (Professor, Lancaster University), Dr. David Malaspina (Associate Professor, University of Colorado), Dr. Jimbao Tao (currently in technology industry), Dr. Julia Stawarz (Northumbria University, UK), Dr. Katherine Goodrich (Assistant Professor, University of West Virginia), Dr. Justin Holmes (Research Scientist, Los Alamos National Laboratory), co-advisor for Dr. Christopher Fowler (Research Scientist, University of West Virginia). Currently advising 3 graduate students.

2001- Postdoctoral Advising/Mentoring at University of Colorado: Dr. Laila Andersson, Dr. Stephan Eriksson, Dr. Yi-Jen Su, Dr. Sabastian Hess, Dr. Joo Hwang, Dr. Narges Ahmadi, Dr. Sanni Hoilijoki, Dr. Fulvia Pucci, Dr. Yi Qi, and Dr. Neha Pathak.

1996-1999 Graduate student and Postdoctoral mentoring at University of California at Berkeley: Dr. Eric Klementis, Dr. William Peria, Dr. Christopher Chaston, and Dr. Greg Delory

Selected Publications **(Professor Ergun has 517 peer-reviewed publications):**

Ergun, R. E., Pathak, N., Usanova, M. E., et al. (2022), Observation of Magnetic Reconnection in a Region of Strong Turbulence. *Astrophysical Journal Letters*, 935(1), doi:10.3847/2041-8213/ac81d4

Ergun, R. E., Usanova, M. E., Turner, D. L. and Stawarz, J. E. (2021). Bursty Bulk Flow Turbulence as a Source of Energetic Particles to the Outer Radiation Belt, *Geophysical Research Letters*, *49*(11), doi:10.1029/2022GL098113

Ergun, R. E., Ahmadi, N., Kromyda, L., et al. (2020). Observations of Particle Acceleration in Magnetic Reconnection-driven Turbulence. *Astrophysical Journal*, *898*(2), doi:10.3847/1538-4357/ab9ab6

Ergun, R. E., Ahmadi, N., Kromyda, L., et al. (2020). Particle Acceleration in Strong Turbulence in the Earth's Magnetotail. *Astrophysical Journal*, *898*(2), doi:10.3847/1538-4357/ab9ab5

Ergun, R. E., Hoilijoki, S.., Ahmadi, N., et al. (2018). Magnetic Reconnection in Three Dimensions: Modeling and Analysis of Electromagnetic Drift Waves in the Adjacent Current Sheet. *Journal of Geophysical Research: Space Physics*, 124(12). Doi:10.1029/2019JA027275

Ergun, R. E., Goodrich, K. A., Wilder, F. D. et al. (2018). Magnetic Reconnection, Turbulence, and Particle Acceleration: Observations in the Earth's Magnetotail. *Geophysical Research Letters*, *45*(8), 3338-3347. doi:10.1002/2018GL076993

Ergun, R. E., Holmes, J. C., Goodrich, et al. (2016). Magnetospheric Multiscale observations of large-amplitude, parallel, electrostatic waves associated with magnetic reconnection at the magnetopause. *Geophysical Research Letters*, *43*(11), 5626-5634. doi:10.1002/2016GL068992

Ergun, R. E. et al., (2016), The Axial Double Probe and Fields Signal Processing for the MMS Mission, *Space Sci. Rev*. DOI: 10.1007/s11214-014-0115-x.

Ergun, R. E., Andersson, et al., (2015). Dayside electron temperature and density profiles at Mars: First results from the MAVEN Langmuir probe and waves instrument. *Geophysical Research Letters*, 42, 8846– 8853. DOI: 10.1002/2015GL065280

Ergun, R. E., Andersson, L., Tao, et al. (2009). Observations of Double Layers in Earth's Plasma Sheet. *Physical Review Letters*, *102*(15), 5 pages. doi:10.1103/PhysRevLett.102.155002

Ergun, R. E., Malaspina, D. M., Cairns, I. H., et al. (2008). Eigenmode structure in solar-wind Langmuir waves. *Physical Review Letters*, *101*(5), 4 pages. doi:10.1103/PhysRevLett.101.051101

Ergun, R. E., Andersson, L., Main, et al. (2004). Auroral particle acceleration by strong double layers: The upward current region. *Journal Of Geophysical Research-Space Physics*, *109*(A12), 14 pages. doi:10.1029/2004JA010545

Ergun, R. E., Su, Y. J., Andersson, L., et al. (2001). Direct observation of localized parallel electric fields in a space plasma. *Physical Review Letters*, 87(4), 4 pages. doi:10.1103/PhysRevLett.87.045003

Ergun, R. E. et al., (2000), Electron-Cyclotron Maser Driven by Charged-Particle Acceleration from Magnetic Field-aligned Electric Fields, *Astrophys. J.*, 538, 456, 2000.

Ergun, R. E., Carlson, C. W., McFadden, et al. (1998). FAST satellite observations of large-amplitude solitary structures. *Geophysical Research Letters*, *25*(12), 2041-2044. doi:10.1029/98GL00636