

Erik Granstedt

Princeton Plasma Physics Laboratory
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EDUCATION ◇ **Princeton University**, Princeton, NJ
Ph.D. in Plasma Physics, expected graduation: 2011.
◇ **California Institute of Technology**, Pasadena, CA
M.S. in Applied Physics, June 2005
B.S., with Honors, in Applied Physics, June 2004
Senior Thesis title: *Measuring X-Rays in the Caltech Spheromak Formation Experiment*

AWARDS ◇ **Graduate Awards**

- National Science Foundation Graduate Fellowship (2007 - 2011)
- DOE Fusion Sciences Fellowship (2007 - 2009)
- Princeton Merit Fellowship (2006 - 2007)
- Princeton First-Year Science and Engineering Fellowship (2006-2007)

◇ **Undergraduate Awards**

- American Physical Society, Division of Plasma Physics, Undergraduate Student Poster Award: *High-Speed Scintillator for X-Ray Detection in Spheromak Plasma* (2003)
- Peripall Speaking Competition Semi-Finalist (2003): for clear presentation of original scientific research to a non-technical audience
- Achievement Rewards for College Scientists (ARCS) Scholar (2003): for academic record, scientific research, and demonstrated leadership ability
- Kingsley Scholarship (2002): for academic excellence and space research
- McLean Brothers Scholarship (2001): for academic achievement and leadership
- Thrivent Financial Scholar (2000-04): for academic achievement

RESEARCH INTERESTS ◇ Optical and RF diagnostics, plasma transport, plasma applications, scientific computing

RESEARCH PROJECTS ◇ Thesis Research: Lithium Tokamak Experiment, Princeton Plasma Physics Lab: 2008-present
Currently studying the nature of the energy transport in the presence of a low-recycling boundary.
Advisors: Dr. Richard Majeski, Dr. Robert Kaita, Dr. Greg Hammett

◇ Theoretical Research: Princeton Plasma Physics Lab:
Developed analytic formula for sheath potential for a wall in contact with a low-collisionality plasma.
Advisor: Dr. Leonid Zakharov

- ◇ Experimental Research: Hall Thruster Experiment, Princeton Plasma Physics Lab: Aug. 2006-2007
Interaction between hollow cathode discharge and the main plasma discharge in the cylindrical Hall Thruster.
Advisors: Dr. Yevgeny Raitses, Professor Nathaniel Fisch.
- ◇ Undergraduate Research: Bellan Plasma Group, California Inst. of Technology: 2003-2004
Designed, developed, and calibrated a high-speed (10ns) scintillator detector for identifying high-energy x-rays emitted by electrons in spheromak plasma formation. Interfaced with digitizer system achieving 800 MHz, 12-bit sampling in a high-noise environment. Worked independently to examine charged-particle acceleration mechanisms in spheromak plasma by performing experiments to detect x-ray emission. Utilized a scintillator to detect hard x-rays and x-ray diodes to detect soft x-rays. Correlated x-ray detection with plasma parameters and other plasma diagnostics to determine regimes of x-ray emission and to identify magnetic reconnection events.
Advisor: Professor Paul M. Bellan
- ◇ Space Mission Design: Center for Space Mission Architecture and Design - JPL/NASA: Summer 2002
Worked in a group to perform a space mission concept study for an ocean observation mission. Interacted with engineers to develop preliminary design of a hyperspectral visible-NIR imager for a micro-satellite bus, selected CMOS detector, designed electronics package. Also performed thermal and radiation analysis.
Advisors: Lloyd C. French and Paul M. DiGiacomo
- ◇ Engineering Assistant: Scripps Institute of Oceanography, Instrument Dev. Group: 2000-2001
Assisted engineers with development/testing of SOLO CTD profilers and the SPRAY CTD ocean glider program Responsibilities included solid modeling, stress analysis, programming, data analysis, electronics development, mechanical testing.

PAPERS &
PRESENTA-
TIONS

- ◇ “Cathode effects in cylindrical Hall thrusters” Granstedt, E.M., Raitses, Y., Fisch, N.J. *Journal of Applied Physics*, 2008, **104**, 103302
- ◇ *Ambipolar Potential of a Collisionless Scrape-off-Layer* E.M. Granstedt, L. Zakharov. NP6.00015 at the APS DPP 2008 meeting.
- ◇ *Characterization of the plasma plume in the current overrun regime of cylindrical Hall thrusters* E.M. Granstedt, Y. Raitses, N.J. Fisch. UP8.00108 at the APS DPP 2007 meeting.
- ◇ *Experiments with Non-Self-Sustained Regimes of Hall Thruster Discharge* Y. Raitses, A. Smirnov, E.M. Granstedt, N.J. Fisch. Poster UP8.00109 at the APS DPP 2007 meeting.
- ◇ *Optimization of the Performance of Cylindrical Hall Thrusters* A. Smirnov, N. Fisch, Y. Raitses, E. Granstedt. Poster VP1.00167 at the APS DPP 2006 meeting.
- ◇ *Measuring X-Rays in the Spheromak Formation Experiment* E. Granstedt, P. Bellan Caltech Applied Physics Senior Thesis, Accepted June 2004
Presented at the Caltech Plasma Seminar Series, May 2004
- ◇ *High-Speed Scintillator for X-Ray Detection in Spheromak Plasma* E. Granstedt, P. Bellan Poster GP1.048 at the APS DPP 2003 meeting.
- ◇ *Oceanic Remote and In-situ coastal Observation Network*, JPL NASA Earth Science System Pathfinder proposal draft; August 2002

SKILLS

- ◇ Digital and analog electronics, and data acquisition systems.
- ◇ Numerical methods, programming in Python, C/C++, MATLAB, Mathematica, and LabView; experience with Linux, Unix, and Windows systems.
- ◇ Communicating effectively in near-fluent Spanish.

Erik Granstedt

- TEACHING ◇ **Teaching Assistant**, Princeton University (Jan. 2009 - May. 2009)
- EXPERIENCE Graduate General Plasma Physics II
- ◇ **Teaching Assistant**, California Institute of Technology (Oct. 2004 - Mar. 2005)
 Undergraduate Thermodynamics
- ◇ **Teaching Assistant**, California Institute of Technology (Mar. - Jun. 2005)
 Undergraduate Nuclear Physics Laboratory
- SOCIETIES ◇ **American Physical Society** student member
- LEADERSHIP ◇ **Captain**, Caltech Intercollegiate Water Polo Team: solved inter-personal disputes, taught
- EXPERIENCE skills
- ◇ **Upper-Class Counselor**: advised students regarding personal and academic issues
- ◇ **Student-Athlete Advisory Committee**: performed administrative tasks, applied for funding,
 registered for tournaments
- REFERENCES Available on request.