

Nathaniel Joseph Fisch

Professional Interests

Plasma physics with applications to nuclear fusion, electrical propulsion, devices, lasers, and astrophysics; complex liquids and continuum electrohydrodynamics; and statistical inference and pattern recognition.

University Education

MIT Department of Electrical Engineering and Computer Science
(BS in June, 1972; MS in January, 1975; Ph.D. in February, 1978)

Academic Honors and Prizes

James Clerk Maxwell Prize for Plasma Physics (2005)

For theoretical development of efficient rf-driven current in plasmas and for greatly expanding our ability to understand, to analyze, and to utilize wave-plasma interactions.

EO Lawrence Award (2004)

Gold Medal, United States Department of Energy

For his brilliant innovations in the theory of wave interactions in plasma; in particular, for the discovery of new methods for driving electric currents.

Fellow of NASA Institute for Advanced Concepts (2003)

Bronze Medal, United States Department of Energy for Outstanding Mentor 2002

Office of Science, Undergraduate Research Programs

In recognition of your dedication as a mentor. For your willingness to share knowledge and to inspire and instill confidence in the next generation of scientists and engineers by setting high expectations, seeking creative solutions, and immersing inquisitive minds in the world of science.

American Physical Society Award for Excellence in Plasma Physics (1992)

For fundamental theoretical investigations of noninductive current generation in toroidally confined plasmas.

Fellow of American Physical Society (1987)

John Simon Guggenheim Memorial Foundation Fellow (1985)

MIT National Scholar (1968—1972)

Employment

2000 — Associated Faculty, Department of Mechanical and Aerospace Engineering, Princeton Univ.

1993 — Associate Director for Academic Affairs, Princeton Plasma Physics Laboratory

1991 — Director, Program in Plasma Physics, Princeton University

1991 — Professor, Department of Astrophysical Sciences, Princeton University

1986 Visiting Scientist, IBM T. J. Watson Research Center

1981 — 86 Consultant, Exxon Research and Engineering Co.

1978 — 91 Research Positions, Princeton Plasma Physics Laboratory

Selected Concurrent Professional Responsibilities

2008 — Associate Editor, Journal of Plasma Physics

1998 — Project Head, Hall Thruster Experiment, Princeton Plasma Physics Laboratory

1991 — Academic Director and co-founder, National Undergraduate Fellowship Summer Program

Ph.D. Students Supervised

M. Herrmann *98 (LLNL, *Cooling Alpha Particles with Waves*); APS Thesis Prize Winner

M. Malyshev *98 (Lucent, *Advanced Plasma Diagnostics for Plasma Processing*, co-advisor)

V. Savchenko *99 (Polymath Research, *Quantum and Radiation Effects in Plasmas*)

R. Heeter *99 (LLNL, *AE and IBW Studies for Controlling Fusion α Particles*, co-advisor)

D. Clark *03 (LLNL, *Raman Laser Amplification in Preformed and Ionizing Plasmas*)

I. Dodin *05 (Princeton, *Nonlinear Dynamics of Plasmas under Intense Electromagnetic Radiation*)

S. Son *05 (LANL, *Reaction Rates and other Processes in a Dense Plasma*)

A. Smirnov *06 (Tri Alpha, *Experimental and Theoretical Studies of Cylindrical Hall Thrusters*, co-advisor)

N. Yampolsky *09 (LANL, *Plasma Waves in Parametric Interactions*)