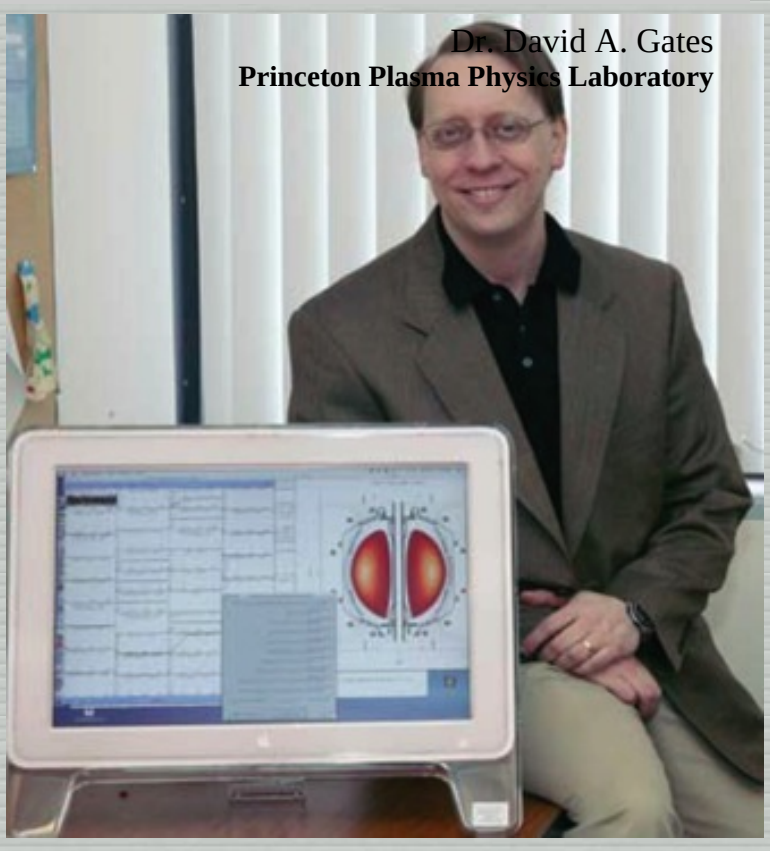
David Gates home page



Dr. David A. Gates
Princeton Plasma Physics Laboratory

Welcome to my website:
I am a plasma physicist at the Princeton Plasma Physics Laboratory. I work on the National Spherical Torus Experiment.

My current areas of research are:
Plasma shape control
Collisional energy transport
Ion power balance
High frequency Alfvén waves
Fast ion energy transfer
Neoclassical tearing modes
Fields errors

My non-work interests are:
Guitar
Crossword puzzles
Jogging and Tae Kwon Do

Professional Experience

2005-present Principal Research Physicist, Princeton Plasma Physics Laboratory, National Spherical Torus Experiment (NSTX) - Physics Group

2001–2005 Research Physicist, Princeton Plasma Physics Laboratory, National Spherical Torus Experiment (NSTX) - Physics Group

1997-2001 Staff Research Physicist, Princeton Plasma Physics Laboratory, National Spherical Torus Experiment (NSTX) - Physics Group

1995-1997 Research Associate, University of Texas-Austin, on contract to Culham Laboratory, Compass-D and START Experiments

1993-1995 Research Associate, Culham Laboratory, Compass-D Experiment

1987-1993 Research Assistant, Columbia University, High Beta Tokamak Group.

Education

1993 Ph. D.- Columbia University, Dept. of Applied Physics, Graduate School of Arts

and
Sciences. Thesis: Passive Stabilization of MHD Instabilities at High $\bullet_N$ in the HBT EP Tokamak.

1989 and
M. Phil.- Columbia University, Dept. of Applied Physics, Graduate School of Arts Sciences. Subject: Plasma Physics.

1987
M. S.- Columbia University, Dept. of Applied Physics, School of Engineering and Applied Science.

1985
B. S.- University of Wisconsin-Madison, Majors: Math and Physics.

Areas of Expertise

Plasma Physics - Magnetohydrodynamic Equilibrium and Stability, Plasma turbulence, Energetic particles physics, Plasma transport, plasma control
Real-time digital control systems
Computer Programming (C, Fortran, Pascal, IDL, Matlab, UNIX) and Data Analysis_
Vacuum Science
Optical and Electro-optical System Design
High Voltage Pulsed Power Systems
Mechanical and Electromechanical Design
Laser Scattering Diagnostics
Spectroscopic Measurement Diagnostics
Magnetic Equilibrium and Fluctuation Diagnostics

Publications

91 refereed journal articles (click for full publication list)
13 First Author Journal articles (click for list of pdf files of first author publications)
Numerous conference papers

Select Invited Talks at major conferences

Effect of Shaping on performance in the National Spherical Torus Experiment, D. A. Gates and the NSTX National Research Team, 47th meeting of the APS Division of Plasma Physics, Denver, CO, October 24-28th, 2005

Progress towards Steady State on NSTX, D. A. Gates et al., 4th meeting of the IAEA TCM on Steady State Operation of Magnetic Fusion Devices and MHD Advanced Scenarios, Ghandinagar, Bhat, India, February 1-5, 2005

Long pulse, high beta, and bootstrap sustained scenarios on NSTX, D. A. Gates and the NSTX National Research Team, 44th meeting of the APS Division of Plasma Physics, Orlando FL, November 11, 2002 (Opening invited talk)

Initial Results from NSTX, D. A. Gates et al., 2000 International Sherwood Theory Meeting, Los Angeles CA, March 27, 2000

High Performance discharges on START, D. A. Gates, et al., 39th meeting of the APS Division of Plasma Physics, Pittsburgh PA, November 20, 1997

Professional Memberships - American Physical Society, Member

Languages - Reading and Conversational Abilities in Russian and French

Collaborations

PPPL-SEAS collaboration – to improve links between PPPL and SEAS
NSTX-DIII-D Control collaboration – to develop plasma control on NSTX
PPPL-Culham Collaboration - to develop understanding of spherical torus physics
PPPL-General Atomics - to develop software for the NSTX plasma control system
Culham -Max Planck-IPP Collaboration - to study the physics of ELM (Edge Localized Modes) in Tokamaks
Columbia University - Ioffe Institute (St. Petersburg, Russia) - to Develop a Multi-Pass Thomson Scattering System for HBT-EP

Activities and Accomplishments

Design, developed, and implemented numerous plasma diagnostics and apparatus
Design, developed, and implemented experimental control systems
Developed data analysis software and numerical algorithms
Supervised students and professional staff
Operated fusion plasma confinement experiments (HBT-EP, COMPASS-D, START NSTX)

Committee Service

FESAC Strategic Planning Panel – identify critical issues from ITER to DEMO (2007)

USBPO Research committee (Operations and Control, co-leader - current)

DoE - Committee of Visitors for large fusion experiments (2006)

Next Step Options Physics Advisory Committee (2000-2002)

APS-DPP Annual Meeting - Program Committee (2000)

ITER MHD Expert Group (1996-7)

Workshop, Colloquium, and Seminar Presentations

Over 40 presentations at 7 seven US research institutions and 8 international institutions