

## William D. Dorland

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- Education**    **Ph.D.** in Astrophysical Sciences – Program in Plasma Physics,  
Princeton University, Princeton NJ (9/93)  
Thesis: *Gyrofluid Models of Plasma Turbulence*  
**Masters** in Public and International Affairs, [emphasis on science policy]  
Princeton University, Princeton NJ (5/93)  
**M.A.** in Astrophysical Sciences, Princeton University, Princeton NJ (6/90)  
**B.S.** in Physics, The University of Texas at Austin (5/88).
- Experience**    *University of Maryland*, (9/02-present). Faculty, Department of Physics. Joint appointments with Center for Scientific Computation and Mathematical Modelling and Institute for Research in Electronics and Applied Physics. Director, Maryland Center for Multiscale Plasma Dynamics. Research focused on multiscale algorithm development and experimental and theoretical tests of nonlinear, kinetic plasma simulations.
- Imperial College, London*, (9/01-9/02). Reader in the Department of Physics. (Continuing as Visiting Reader.) Taught, developed astrophysical applications of gyrokinetics, and collaborated with scientists at Culham Laboratory on gyrokinetic magnetic fusion problems.
- The University of Maryland*, (1/98-8/01). Developed nonlinear gyrokinetic code, led small research effort in plasma microturbulence, with an emphasis on flows, kinetic effects, and small-scale (ETG) turbulence
- The University of Texas*, (9/93-12/97). Developed general geometry and multiple-species theory for toroidal gyrofluid and gyrokinetic simulations; carried out realistic gyrofluid simulations of tokamak microturbulence; developed and tested IFS/PPPL model for anomalous thermal transport in tokamaks.
- Princeton University* (1/90-9/93) [Thesis Research with Dr. G. W. Hammett], Developed first gyrofluid models for analytical and numerical investigations of low-frequency instabilities in plasmas, and implemented these models in 3D fluid simulations of tokamak microturbulence. Performed linear analyses and nonlinear tests of the models.
- US State Department*, Washington, DC (6/90-8/90). With the Bureau of Oceans, International Environmental and Scientific Affairs, Office of Nuclear Safety and Technology. Acted at Junior Foreign Service Officer level, writing cables, reports, *etc.*; primarily on issues related to the Chernobyl accident, the International Thermonuclear Experimental Reactor, and nuclear proliferation.
- Honors**        Fellow of the American Physical Society (2005)  
Award for Creative Ideas in International Education, CIEE (2000)  
Outstanding Young Texas Ex (1998)  
U. S. Department of Energy Fusion Energy Postdoctoral Fellowship (1993-1995)  
Highest and Special Honors in Physics, University of Texas (1988)  
Phi Beta Kappa (1988)  
Friar Society (1988)  
Most Outstanding Male Student, (University of Texas, 1988)

- Selected Publications** W. M. Nevins, G. W. Hammett, A. M. Dimits, W. Dorland, and D. E. Shumaker *Discrete particle noise in particle-in-cell simulations of plasma microturbulence*, Phys. Plasmas 12, 122305 (2005).
- B. N. Rogers and W. Dorland, *Noncurvature-driven modes in a transport barrier*, Phys. Plasmas 12, 062511 (2005).
- N. F. Loureiro, S. C. Cowley, W. Dorland, M. G. Haines, and A. A. Schekochihin, *X-Point Collapse and Saturation in the Nonlinear Tearing Mode Reconnection*, Phys. Rev. Lett. 95, 235003 (2005).
- K. Hallatschek and W. Dorland, *Giant Electron Tails and Passing Electron Pinch Effects in Tokamak-Core Turbulence*, Phys. Rev. Lett. 95, 055002 (2005).
- D. R. Sisan, N. Mujica, W. A. Tillotson, Y-M. Huang, W. Dorland, A. B. Hassam, T. M. Antonsen, and D. P. Lathrop, *Experimental observation and characterization of the magnetorotational instability*, Phys. Rev. Letters, **93**, 114502, (2004).
- E. Quataert, W. Dorland, G. W. Hammett, *The Magnetorotational Instability in a Collisionless Plasma*, Astrophysical Journal, **577**, 524 (2002).
- Synergistic Activities** With Steve Cowley (UCLA), I am a co-Director of the Center for Multiscale Plasma Dynamics (<http://cmpd.umd.edu>), one of two DOE national fusion science centers. We are working on applications of multiscale algorithms to plasma physics problems. I have presented invited talks on more than 30 occasions, including several international physics conferences, such as the International Sherwood Fusion Theory Meeting, TTF, the American Geophysical Union, and APS conferences. I have been a co-author on > 100 additional contributed presentations. My research has been centered on understanding turbulence in hot, magnetized plasma.
- Principal Collaborators** S. C. Cowley, Imperial College (London) and UCLA  
 J. F. Drake, University of Maryland  
 K. Hallatschek, Max Planck Institute (Garching)  
 G. W. Hammett, Princeton Plasma Physics Laboratory  
 F. Jenko, Max Planck Institute, Garching  
 M. Kotschenreuther, University of Texas  
 N. F. Loureiro, University of Maryland  
 E. Quataert, University of California at Berkeley  
 B. N. Rogers, Dartmouth College  
 M. Shay, University of Delaware  
 A. Schekochihin, Cambridge University  
 T. Tatsuno, University of Maryland
- Professional Service** Member, APS Panel on Public Affairs (2005-2008).
- Member, National Research Council Committee, "Plasma 2010: An Assessment of and Outlook for Plasma Science" (2005-2007).
- Chair, Transport Task Force Modeling Group (1998-2002); Member, TTF Executive Committee (1998-2005).
- Co-Director, Plasma physics activities at the Abdus Salam International Centre for Theoretical Physics, College, Trieste, (2001-2005).
- Chair, (1997-1998), APS Committee for the International Freedom of Scientists. Member, 1996-1998.
- Chair, (1996-1998), UT International Education Scholarship Student Fee Committee. Member, 1993-1998.