

**Daniel Perry Lathrop**  
**Curriculum Vitae**  
**February 2020**

We have endeavored to make this *curriculum vitae* a current and accurate statement of my professional record.

**I. Personal Information**

Lathrop, Daniel Perry  
Institute for Research in Electronics and Applied Physics (IREAP)  
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[lathrop@umd.edu](mailto:lathrop@umd.edu)  
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**I.B. Academic Appointments at UMD**

1997-2000, Assistant Professor, Dept. of Physics, University of Maryland  
1997-2004, Affiliate Professor, Institute for Physical Sciences and Technology, University of Maryland  
2000-2006, Associate Professor, Dept. of Physics, University of Maryland  
2005-2006, Associate Professor, Institute for Physical Sciences and Technology, University of Maryland  
2005-2007, Affiliate Professor, Dept. of Geology, University of Maryland  
2006-present, Professor (tenure home), Dept. of Physics, University of Maryland  
2006-present, Professor, Institute for Physical Sciences and Technology, University of Maryland  
2007-present, Professor, Dept. of Geology, University of Maryland  
1997-present, member, Institute for Research in Electronics and Applied Physics  
2004-present, Affiliate Professor, Electrical and Computer Engineering  
2004-present, Affiliate Professor, Mechanical Engineering

**I.C. Administrative Appointments at UMD**

1997-present, Member, Institute for Research in Electronics and Applied Physics, University of Maryland  
2005-2006, Acting Director, Institute for Research in Electronics and Applied Physics, University of Maryland  
2006-2012, Director, Institute for Research in Electronics and Applied Physics, University of Maryland  
2012-2014, Associate Dean for Research, College of Computer, Mathematical and Natural Sciences, University of Maryland  
2014-2017 Entrepreneurial site miner for the Vice President for Research and the State of Maryland TEDCO MII initiative

**I.D. Other Employment**

1987-1989, Teaching Assistant, Dept. of Physics, University of Texas  
1988-1991, Research Assistant, Center for Nonlinear Dynamics, Dept. of Physics, University of Texas  
1992, Lecturer, Depts. of Physics, Engineering, and Applied Science, Yale University, Spring  
1993-1994, Technical Consultant, Tidal Electric Inc., Branford, Conn.  
1992-1994, Research Affiliate, Dept. of Physics, Yale University

1992-1994, Postdoctoral Research Associate, Dept. of Mech. Eng., Yale University. Postdoctoral advisor: K.R. Sreenivasan  
1994, Associate Research Scientist, Dept. of Mechanical Engineering, Yale University  
1994-1997, Assistant Professor, Dept. of Physics, Emory University  
2019-present, CTO and Senior Scientist, Recurrent Computing, Inc.

### I.E. Educational Background

1987, B.A. Physics, University of California at Berkeley  
1991, Ph.D. Physics, University of Texas at Austin

## **II. Research, Scholarly and Creative Activities**

### II.B. Chapters

#### II.B.1. Books

S. Fauve and D.P. Lathrop, "Laboratory Experiments on Liquid Metal Dynamos and Liquid Metal MHD Turbulence," Chapter 16 in *Astrophysical and geophysical fluid dynamics, and dynamos*, ed. by A.M. Soward, C.A. Jones, D.W. Hughes and N.O. Weiss (pub. Taylor and Francis 2004). Pages 393-426. Print ISBN: 978-0-8493-3355-2. eBook ISBN: 978-0-203-01769-2.

### II.C. Articles in Refereed Journals

*Full citation, inclusive of all authors in the order of publication and page numbers. Review articles and invited articles should be so identified. Optional: include DOI.*

1. D.P. Lathrop and E.J. Kostelich, "Characterization of an Experimental Strange Attractor by Periodic Orbits," *Phys. Rev. A*, **40**, 4028-4031 (1989).
2. D.P. Lathrop, J. Fineberg, and H.L. Swinney, "Turbulence between Concentric Rotating Cylinders at Large Reynolds Numbers," *Phys. Rev. Lett.*, **68**, 1515-1518 (1992).
3. D.P. Lathrop, J. Fineberg, and H.L. Swinney, "Transition to Shear Driven Turbulence in Couette-Taylor Flow," *Phys. Rev. A*, **46**, 6390-6405 (1992).
4. A. Juneja, D.P. Lathrop, K.R. Sreenivasan, and G. Stolovitzky, "Synthetic Turbulence," *Phys. Rev. E*, **49**, 5179-5194 (1994).
5. C.L. Goodridge, W. Tao Shi, and D.P. Lathrop, "Threshold Dynamics of Singular Gravity-Capillary Waves," *Phys. Rev. Lett.*, **76**, 1824-1827 (1996).
6. C.L. Goodridge, H.G.E. Hentschel, and D.P. Lathrop, "Viscous Effects in Droplet Ejecting Capillary Waves," *Phys. Rev. E*, **56**, 472-475 (1997).
7. W. Tao Shi, C.L. Goodridge, and D.P. Lathrop, "Breaking Waves: Bifurcations Leading to a Singular Wave State," *Phys. Rev. E*, **56**, 4157-4161 (1997).
8. .E. Høegrefe, N.L. Peffley, C.L. Goodridge, W.T. Shi, H.G.E. Hentschel, and D.P. Lathrop, "Power-Law Singularities in Gravity-capillary Waves," *Physica D*, **123**, 183-205(23) (1998). (INVITED)
9. C.L. Goodridge, H.G.E. Hentschel, and D.P. Lathrop, "Breaking Faraday Waves: Critical Slowing of Droplet Ejection Rates," *Phys. Rev. Lett.*, **82**, 3062-3065 (1999).
10. B.W. Zeff, J. Fineberg and D.P. Lathrop, "Formation of a Self-Focusing Singularity on a Fluid Surface," *Phys. Fluids A: Gallery of Fluid Motion*, **11**, S8, (1999).
11. A.B. Hassam, J.F. Drake, D. Goel and D.P. Lathrop, "Liquid Metal Flow Encasing a Magnetic Cavity," *Phys. of Plasmas Lett.*, **7**, 1081-1084 (2000).

12. B.W. Zeff, B. Kleber, J. Fineberg, and D.P. Lathrop, "The Dynamics of Finite-Time Singularities: Curvature Collapse and Jet Eruption on a Fluid Surface," *Nature*, **403**, 401-404, (Jan. 27, 2000).  
*Accompanying review* "News and Views: Jets from a singular surface," by M.P. Brenner, *Nature*, **403** 377-378, (Jan. 27, 2000).
13. N. Peffley, A.B. Cawthorne, A.G. Goumivski, and D.P. Lathrop, "Characterization of Experimental Dynamos," *Geophys. J. Int.*, **142**, 52-58, (2000).
14. N.L. Peffley, A.B. Cawthorne, and D.P. Lathrop, "Toward a Self-generating Magnetic Dynamo: the Role of Turbulence," *Phys. Rev. E*, **61**, 5287-5294 (2000).
15. E.J. Boettcher, J. Fineberg, D.P. Lathrop, "Turbulence and wave breaking effects on air-water gas exchange," *Phys. Rev. Lett.*, **85**, 2030-2033 (2000).
16. D. Sweet, E. Ott, T.M. Antonsen, D.P. Lathrop and J.M. Finn, "Blowout Bifurcations and the Onset of Magnetic Dynamo Action," *Phys. of Plasmas*, **8**, 1944-1952 (2001).
17. D. Sweet, B. Zeff, E. Ott and D.P. Lathrop, "Three Dimensional Optical Billiard Chaotic Scattering," *Physica D*, **154**, 207-218(12) (2001).
18. D. Sweet, E. Ott, J.M. Finn, T.M. Antonsen, Jr. and D.P. Lathrop, "Blowout Bifurcations and the Onset of Magnetic Activity in Turbulent Dynamos," *Phys. Rev. E*, **63**, 066211 (2001) [4 pages].
19. D.P. Lathrop, W.L. Shew, and D.R. Sisan, "Laboratory Experiments on the Transition to MHD Dynamos," in *Plasma Phys. and Cont. Fusion*, **43**, 151-160(10) (2001).
20. B.W. Zeff, D.D. Lanterman, R. McAllister, R. Roy, E.J. Kostelich, and D.P. Lathrop, "Measuring intense rotation and dissipation in turbulent flows," *Nature*, **421**, Jan. 9 2003, 146-149 (2003).
21. D.R. Sisan, W.L. Shew and D.P. Lathrop, "Lorentz Force Effects on Liquid Metal Turbulence," *Physics of Earth and Planetary Interiors*, **135**, 137-159(23) (2003).
22. T.H. van den Berg, C.R. Doering, D. Lohse, and D.P. Lathrop, "Smooth and rough boundaries in turbulent Taylor-Couette flow," *Phys. Rev. E*, **68**, 036307 (2003) (5 pages).
23. J. Stambaugh, D.P. Lathrop, E. Ott, and W. Losert, "Pattern formation in a monolayer of magnetic spheres," *Phys. Rev. E*, **68**, 026207 (2003) (5 pages).
24. E.A. Rogers, R. Kalra, R.D. Schroll, A. Uchida, D.P. Lathrop, R. Roy, "Generalized synchronization of spatiotemporal chaos in a liquid crystal spatial light modulator," *Phys. Rev. Lett.*, **93**, 084101 (2004).
25. 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. Lett.*, **93**, 114502 (2004).
26. Thomas H. van den Berg, Stefan Luther, Daniel P. Lathrop, and Detlef Lohse, "Drag Reduction in Bubbly Taylor-Couette Turbulence," *Phys. Rev. Lett.*, **94**, 044501 (2005).
27. A. Kumar, S. Banerjee, and D.P. Lathrop, "Dynamics of a piecewise smooth map with singularity," *Physics Letters A*, **37** 87-92 (2005).
28. W.L. Shew and D.P. Lathrop, "Liquid sodium model of geophysical core convection," *Phys. Earth and Planetary Interiors*, **153**, 136-149 (2005).
29. N. Mujica and D.P. Lathrop, "Bistability and hysteresis in a highly turbulent swirling flow," *Physica A*, **356**, 162-166 (2005).
30. B. Eckhardt and D.P. Lathrop, "Nonlinear normal forms for non-normal fixed points," *Nonlinear Phenom. Complex Systems*, **9**, 133-140 (2006).

31. N. Mujica and D.P. Lathrop, "Hysteretic gravity-wave bifurcation in a highly turbulent swirling flow," *J. Fluid Mech.*, **551**, 49-62 (2006).
32. G.P. Bewley, D.P. Lathrop, and K.R. Sreenivasan, "Superfluid helium - Visualization of quantized vortices," *Nature*, **441**, 588 (2006).
33. D.P. Lathrop, "Fluid dynamics - Turbulence lost in transience," *Nature*, **443**, 7107 (2006).
34. T.H. van den Berg, D.P.M. van Gils, D.P. Lathrop, and D. Lohse, "Bubbly turbulent drag reduction is a boundary layer effect," *Phys. Rev. Lett.*, **98**, 084501 (2007).
35. G.P. Bewley, D.P. Lathrop, and K.R. Sreenivasan, "Inertial waves in rotating grid turbulence," *Phys. Fluids*, **19**, 071701 (2007).
36. D.H. Kelley, S.A. Triana, D.S. Zimmerman, A. Tilgner, and D.P. Lathrop, "Inertial waves driven by differential rotation in a planetary geometry," *Geophys. & Astrophys. Fluid Dyn.*, **101**, 469-487 (2007).
37. G.P. Bewley, K.R. Sreenivasan, and D.P. Lathrop, "Particles for tracing liquid helium," *Experiments in Fluids*, **44**, 887-896 (2008).
38. G.P. Bewley, M.S. Paoletti, K.R. Sreenivasan, and D.P. Lathrop, "Characterization of reconnecting vortices in superfluid helium," *Proc. Nat. Acad. Sci.*, **105**, 13707-13710 (2008).
39. S.A. Triana, D.H. Kelley, D. Zimmerman, D. Sisan, and D.P. Lathrop, "Hopf bifurcations with fluctuating gain," *Astro. Nach.*, **329**, 701-705 (2008).
40. M.S. Paoletti, M.E. Fisher, K.R. Sreenivasan, and D.P. Lathrop, "Velocity Statistics Distinguish Quantum Turbulence from Classical Turbulence," *Phys. Rev. Lett.*, **101**, 154501 (2008).
41. M.S. Paoletti, R.B. Fiorito, K.R. Sreenivasan, and D.P. Lathrop, "Visualization of superfluid helium flow," *J. Phys. Soc. of Japan*, **77**, 111007 (2008).
42. R. Zhang, H.L.D.D. Cavalcante, Z. Gao, D.J. Gauthier, J.E.S. Socolar, M.M. Adams, and D.P. Lathrop, "Boolean Chaos," *Phys. Rev. Lett.*, **80**, 045202 (2009).
43. S.Y. Chen, G.L. Eyink, D.P. Lathrop and C. Meneveau, "At the boundaries of nonlinear physics, fluid mechanics and turbulence: where do we stand?" *Physica D*, **239**, 1211-1213 (2010).
44. M.S. Paoletti, M.E. Fisher, K.R. Sreenivasan, and D.P. Lathrop, "Reconnection dynamics for quantized vortices," *Physica D*, **239**, 1367-1377 (2010).
45. D.H. Kelley, S.A. Triana, D.S. Zimmerman, and D.P. Lathrop, "Selection of inertial modes in spherical Couette flow," *Phys. Rev. E*, **81**, 026311 (2010).
46. M.S. Paoletti and D.P. Lathrop, "Angular momentum transport in turbulent flow between independently rotating cylinders," *Phys. Rev. Lett.*, **106**, 024501 (2011).
47. M.S. Paoletti and D.P. Lathrop, "Quantum Turbulence," *Ann. Rev. Cond. Matt. Phys.*, **2**, 213-234 (2011).
48. D.P.M. van Gils, G.W. Bruggert, D.P. Lathrop, C. Sun, D. Lohse, "The Twente turbulent Taylor-Couette ((TC)-C-3) facility: Strongly turbulent (multiphase) flow between two independently rotating cylinders" *Rev. Sci. Inst.*, **76**, 025105 (2011).
49. D.S. Zimmerman, S.A. Triana and D.P. Lathrop, "Bi-stability in turbulent, rotating spherical Couette flow," *Phys. Fluids*, **23**, 065104 (2011).

50. H. Matsui, M. Adams, D. Kelley, S.A. Triana, D.S. Zimmerman, B.A. Buffett and D.P. Lathrop, "Numerical and experimental investigation of shear-driven inertial oscillations in an Earth-like geometry," *Phys. Earth Planet. In.*, **188**, 194-202 (2011).
51. S.A. Triana, D.S. Zimmerman and D.P. Lathrop, "Precessional states in a laboratory model of the Earth's core," *J. Geophys. Res.-Sol. Ea.*, **117**, B04103 (2012).
52. D.P. Meichle, C. Rorai, M.E. Fisher and D.P. Lathrop, "Quantized vortex reconnection: Fixed points and initial conditions," *Phys. Rev. B*, **86**, 014509 (2012).
53. M. Rieutord, S.A. Triana, D.S. Zimmerman and D.P. Lathrop, "Excitation of inertial modes in an experimental spherical Couette flow," *Phys. Rev. E*, **86**, 026304 (2012).
54. M. S. Paoletti, D. P.M. van Gils, B. Dubrulle, C. Sun, D. Lohse and D. P. Lathrop, "Angular momentum transport and turbulence in laboratory models of Keplerian flows," *A & A*, **547**, 2012.
55. E. Fonda, K.R. Sreenivasan, D.P. Lathrop, "Liquid nitrogen in fluid dynamics: Visualization and velocimetry using frozen particles," *Rev. Sci. Instrum.*, **83** (8), 085101-085101-11, 2012.
56. D. An, P.B. Sunderland, D.P. Lathrop, "Suppression of sodium fires with liquid nitrogen," *Fire Safety J.*, **58**, 204-207, 2013.
57. E. Fonda, D.P. Meichle, N.T. Ouellette, S. Hormoz, K.R. Sreenivasan, D.P. Lathrop, "Direct observation of Kelvin waves excited by quantized vortex reconnections," *P. Natl. Acad. Sci. USA*, 111 (Supp. 1), 4707 (2014).
58. D.S. Zimmerman, S.A. Triana, H.-C. Nataf, and D.P. Lathrop "A turbulent, high magnetic Reynolds number experimental model of Earth's core," *J. of Geophysical Res.: Solid Earth*, 119, 4538 (2014).
59. M. Park, J.C. Rodgers, and D.P. Lathrop, "Chaotic Oscillations in a CMOS Inverter Coupled With ESD Protection Circuits Under Radio Wave Excitation," *IEEE Trans. On Electromagnetic Compatibility*, 56, 530 (2014).
60. D.P. Meichle and D.P. Lathrop, "Nanoparticle dispersion in superfluid helium," *Rev. of Sci. Inst.* 85, 073705 (2014).
61. S.A. Triana, D.S. Zimmerman, H.-C. Nataf, A. Thorette, V. Lekic, and D.P. Lathrop, "Helioseismology in a bottle: modal acoustic velocimetry," *New J. of Phys.* 16, 113005 (2014).
62. F. Nordsiek, S.G. Huisman, R.C.A. van der Veen, C. Sun, D. Lohse, and D.P. Lathrop, "Azimuthal velocity profiles in Rayleigh-stable Taylor-Couette flow and implied axial angular momentum transport," *J. Fluid Mech.* 774, 342 (2015).
63. M. Adams, D. Stone, D.S. Zimmerman, and D.P. Lathrop, "Liquid sodium models of the Earth's core," *Prog. Earth Planet. Sci.* 29, 1 (2015).
64. M. Park, J.C. Rogers, and D.P. Lathrop, "True random number generation using CMOS Boolean chaotic oscillator," *Microelectr. J.* 46, 1364 (2015).
65. E. Fonda, K.R. Sreenivasan, and D.P. Lathrop, "Sub-micron solid air tracers for quantum vortices and liquid helium flows", *Rev. Sci. Instrum.*, 87, 025106 (2016).
66. A. Wang, C.M. Ikeda-Gilbert, J.H. Duncan, D.P. Lathrop, M.J. Cooker, and A.M. Fullerton, "The impact of a deep-water plunging breaker on a wall with its bottom edge close to the mean water surface," *J. Fluid Mech.*, 843, 680-721 (2018).
67. E. Fonda, K.R. Sreenivasan, and D.P. Lathrop, "Reconnection scaling in quantum fluids," *Proc. Nat. Acad. Sci.* 6, 1924-1928 (2018).

68. I. Shani, L. Shaughnessy, J. Rzasas, A. Restelli, B.R. Hunt, H. Komkov, and D.P. Lathrop, "Dynamics of analog logic-gate networks for machine learning," *Chaos: An Interdisc. J. of Nonlinear Sci.*, 29, 123130 (2019).

## II.D. Published Conference Proceedings

### II.D.3. Conference Proceedings

1. D.P. Lathrop and E.J. Kostelich, "Analyzing Periodic Saddles in Experimental Strange Attractors," in *Quantitative Measures of Complex Dynamical Systems*, ed. N.D. Abraham and A. Albano (New York: Plenum, Inc.), NATO Advanced Science Institute Series, 1989.
2. D.P. Lathrop and E.J. Kostelich, "Periodic Saddles," in *Nonlinear Modeling and Forecasting, SFI Studies in the Sciences of Complexity*, Proc. Vol. XIII, eds. M. Casdagli and S. Eubank, (New York: Addison-Wesley), 1991.
3. E.J. Kostelich and D.P. Lathrop, "The Prediction of Chaotic Time Series, a Variation on the Method of Analogues," in *Predicting the Future and Understanding the Past, SFI Studies in the Sciences of Complexity*, Proc. Vol. XVII, eds. A.S. Weigend and N.A. Gershenfeld, (New York: Addison-Wesley), 1992.
4. J. Fineberg, D.P. Lathrop, and H.L. Swinney, "Asymptotic Scaling in Turbulent Couette-Taylor Flow," in *Turbulence in Spatially Extended Systems*, (New York: Nova Science), 1993.
5. W.L. Shew, D.R. Sisan, and D.P. Lathrop, "Hunting for dynamos: eight different liquid sodium flows," P. Chossat et al. (eds.), *Dynamo and Dynamics, a Mathematical Challenge*, 83-92. Kluwer Academic Publishers, 2001.
6. D.R. Sisan, W.L. Shew, and D.P. Lathrop, "Liquid Sodium Experiments: The Effect of Turbulence and Lorentz Forces," in *Conference Proceedings of 6<sup>th</sup> Experimental Chaos Conference*, M. L. Spano (ed.), AIP Press, 2002.
7. D.S. Zimmerman, S.A. Triana, D.R. Sisan, W.A. Tillotson, W. Dorland, and D.P. Lathrop, "Characterization of the Magnetorotational Instability from a Turbulent Background State," in "MHD Couette Flows: Experiments and Models," eds. R. Rosner, Gunther Rudiger, and A. Bonanno (AIP Press, 2004).
8. Vortex Creation in Quantum Fluid Phase Transitions: An Experimental Perspective
9. P. Megson, I. Shani, and D.P. Lathrop, "Vortex creation in quantum fluid phase transitions, and experimental perspective" Memorial Volume For Kerson Huang, 71(2017).
10. H. Komkov, A. Restelli, B. Hunt, L. Shaughnessy, I. Shani, and D.P. Lathrop, "The Recurrent Processing Unit: Hardware for High Speed Machine learning," ArXiv: 1912.07363 (2019).

## II.E. Conferences, Workshops, and Talks

### II.E.1. Keynotes

- Geodynamics Seminar keynote presentation, Woods Hole Oceanographic Institute, February 2013.
- Laboratory models of the Earth's Core.
- Plenary speaker at STATPHYS 2016 in Lyon, France, July 2016.

### II.E.2. Invited Talks

1. American Physical Society, March 1992.

2. Materials Research Society, November 1993.
3. Engineering Science Conference, October 1996.
4. 17th Annual International Conference, Nonlinear Waves and Solitons in Physical Systems, Los Alamos, May 1997.
5. 4th Experimental Chaos Conference, Boca Raton, Fla., August 1997.
6. IUTAM Symposium on Air-Sea Interactions, Nice, France, May 1998.
7. International Experimental Dynamo Conference, Karlsruhe, Germany, March 2000.
8. SIAM Materials Research Conference, Philadelphia, Penn., May 2000.
9. Nonlinear Dynamics and Patterns, Austin, Texas, June 2000.
10. IUTAM Symposium on Free Surface Flows, Birmingham, England, July 2000.
11. NATO conference: Dynamo and Dynamics, a Mathematical Challenge, Corsica, August 2000.
12. American Geophysical Union, San Francisco, December 2000.
13. Dynamics Days 2001, Chapel Hill, N.C., January 2001.
14. SIAM Applications to Dynamical Systems, Snowbird, Utah, May 2001.
15. European Physical Society, EPS 28, Madeira, Portugal, June 2001.
16. University of Chicago, July 2001.
17. Studies of the Earth's Deep Interior, Lake Tahoe, July 2002.
18. Astrophysical Fluid Mechanics, Durham, England, July 2002.
19. Planetary Dynamos spring school in Les Houches, France, April 2003.
20. Nonideal turbulence, Bad Honnef, Germany, April 2003.
21. Core turbulence and numerical models, UCLA, July 2003.
22. Gordon conference on nonlinear science, Tilton, N.H., August 2003.
23. Washington Geological Society, November 2003. Laboratory experiments modeling planetary cores and astrophysical processes.
24. International conference on nonlinear phenomena, Bangalore, India, Jan 2004.
25. Understanding Complex Systems Conference, Urbana, July 2004.
26. International Conference on Theoretical and Applied Mechanics, Warsaw, Poland, August 2004.
27. American Geophysical Union, San Francisco, December 2004.
28. Perm Dynamo Days, Perm, Russia, February 2005.
29. International Assoc. of Geomag. and Aeronomy, Toulouse, France, July 2005.
30. Kirchatov Institute, Moscow, Russia, January 2006.
31. American Physics Society, Dallas, Texas, April 2006.
32. Japanese Geophysical Society, Tokyo, Japan, May 2006.
33. American Geophysical Union, Baltimore, Maryland, May 2006.

34. National Center for Atmospheric Research (MHD conference), June 2006.
35. Studies of the Earth's Deep Interior, Prague, July 2006.
36. Quantum Fluids and Solids, Kyoto, Japan, July 2006.
37. Kurchatov Institute, Moscow, Russia, October 2006.
38. Quantum turbulence, University of Florida, November 2006.
39. Bullard Lecture, American Geophysical Union, San Francisco, December 2006.
40. American Physical Society, Denver, Colorado, March 2007.
41. Gordon Conference on Nonlinear Science, Waterville, Maine, June 2007.
42. National Science Foundation, High Performance Computing, July 2007.
43. Turbulent Mixing and Beyond, Trieste, Italy, August 2007.
44. MHD in Laboratory and Astrophysics, Catania, Italy, September 2007.
45. Ultraclean systems, Gifu, Japan, November 2007.
46. APS DPP, Orlando, Florida, November 2007.
47. Hands on Science, Ghandinagar, India, January 2008.
48. Magnetic Fields in the Universe, KITP, U.C. Santa Barbara, July 2008.
49. Low Temperature 25, Amsterdam, Netherlands, August 2008.
50. Turbulence and Statistical Mech., Les Houches, France, March 2009.
51. Gordon Conference on Nonlinear Science, June 2009.
52. Chaos/Xaos, Woods Hole, Mass., July 2009.
53. Natural Dynamos, Stara Lesna, Slovakia, Sept. 2009.
54. Taylor Couette Conference, Princeton, N.J., Sept. 2009.
55. International Symposium on Turbulence, Beijing, China, Sept. 2009.
56. American Geophysical Union, San Francisco, Cal., Dec. 2009.
57. Vortices, Superfluid Dynamics, and Quantum Turbulence, Lammi, Finland, April 2010.
58. Self-Organization in Turbulent Plasmas and Fluids, Dresden, Germany, May 2010.
59. Studies of the Earth's Deep Interior, Santa Barbara, Cal., July 2010.
60. Spontaneous Energy Focusing Phenomena and Multiscale Physics, Singapore, August 2010.
61. Turbulence and Mixing, Eilat, Israel, October 2010.
62. Quantum turbulence, Abu Dhabi May 2011. Characterization of quantum turbulence in superfluid helium.
63. Taylor Couette Conference, Leeds, UK, July 2011. Understanding angular momentum transport in rotating turbulence.
64. Natural and laboratory dynamics, Corsica, September 2011. Laboratory models of the Earth's core.



65. Turbulence convection and shear flows, Bad Durkheim Germany, September 2011. Experimental observations in Taylor-couette and spherical-couette flows, up to  $R = 1.5 \cdot 10^7$ .
66. APS DPP, Salt Lake City, November 2011. Learning about dynamos in nature from experiments in Na, LN<sub>2</sub>, H<sub>2</sub>O and LHe.
67. Quantum turbulence, Abu Dhabi, May 2012. Visualization of quantum vortex dynamics in 4He Direct.
68. IUTAM symposium, Dublin, Ireland, July 2012. Self-focusing in fluid dynamics.
69. Stanley Corrsin Award Lecture: Quantum fluid flows: the strange things we see in superfluid helium, APS DFD, San Diego, Cal., November 2012.
70. CMSO Dynamo Meeting, Madison, Wisconsin, December 2012. Learning about magnetic field and vortex dynamics from experiments in metallic sodium and liquid helium.
71. Dynamics Days, Denver, Colo., January 2013. Quantum Fluid Flows: the Strange Things We See in Superfluid Helium.
72. European GdR Dynamo Conference, Switzerland, July 2013. Theoretical challenges from Initial observations from the three meter diameter geodynamo experiment.
73. Balticon, Baltimore, Maryland, May 2014. Generating magnetic fields the way planets and stars do.
74. Dynamics Days Asia Pacific 08, Chennai, India, July 2014. Visualization and characterization of quantum fluid dynamics.
75. SEDI, IUGG, Shonan Village Center, Kanagawa, Japan. August 2014. Liquid sodium models of the Earth's core.
76. March Meeting 2016, Baltimore, MD. March 2016. Three-dimensional nanoparticle dynamics in superfluid helium.
77. 14<sup>th</sup> Experimental Chaos and Complexity Conference (ECC), Banff, Canada. May 2016. Visualization of quantum vortices in superfluid helium.

#### II.E.12. Workshops

1. U.C.S.D. workshop on Dynamical Systems, March 1990.
2. Santa Fe workshop on Nonlinear Prediction and Modeling, September 1990.
3. Arizona State University workshop on Dynamics of Structures and Intermittencies in Turbulence, May 1991.
4. NATO Advanced Research Workshop on Spatio-Temporal Properties of Centrifugal Instabilities, Nice, France, April 1993.
5. 9th International Couette-Taylor Workshop, Boulder, Colo., August 1995.
6. International Workshop on Laboratory Dynamos, Riga, Latvia, June 1998.
7. Fluid dynamics workshop, Banff, Alberta, December 2003.
8. Workshop on MHD Couette Flow, Catania, Italy, February 2004.
9. Workshop on the Interrelationship between Plasma Exp. in Lab. and Space, Tromso, Norway, July 2005.

10. ICMS Workshop on Tangled Magnetic Fields, Edinburgh, Scotland, October 2012. Learning about magnetic fields and vortices from experiments in metallic sodium and liquid Helium.
11. CIDER Working Group on Geomagnetic Prediction, College Park, Maryland, July 2014. Geomagnetic prediction working group kick-off.
12. Turbulence: In the Sky as on the Earth IIP Workshop, Natal, Brazil, October 2014. Quantum fluid turbulence.
13. Geomagnetic Prediction Working Group pre-AGU Workshop, Berkeley, CA, December 2014. Introduction and discussion of prediction competition.
14. NSF Condensed Matter Physics Broader Impacts Workshop, January 2015. Broader impacts in condensed matter physics.
15. Basic Issues of Extreme Events in Turbulence Workshop, Austria, May 2015. Singular events in fluid flow mediated by topology change.
16. ICTW Workshop, Germany, June 2015. Waves, turbulence and magnetic fields in Spherical Couette flow.
17. Grand Challenges in Quantum Fluids and Solids Workshop Buffalo, August 2015. Visualization in quantum fluids.
18. Pre-AGU CIDER Workshop, Berkeley, CA, December 2015. Working group report: Geomagnetic Prediction Working Group.
19. UMD College Park Russia-US Workshop: "Phase Transitions in Fluids and Plasma", College Park, MD, April 2016. Observations of superfluid helium and questions about transitions to the quantum fluid state.
20. Understanding the Earth Core and Nutation Workshop, Brussels, Belgium, September 2016. Precession, magnetic induction, and acoustic modal velocimetry in the laboratory
21. National High Magnetic Field Lab. Workshop on quantum fluid flows, April 2017.
22. Hebrew University of Jerusalem, Jayfest, Oct. 2017.
23. Niels Bohr Institute in Copenhagen, Oct. 2017.
24. Indian Center for Theoretical Physics, Workshop on Turbulence from Angstrom and Light Years, January 2018.

#### II.E.13. Colloquia

1. University of Pennsylvania, April 1998.
2. Haverford College, April 1998.
3. Georgetown University, Washington, D.C., October 1998.
4. National Center for Atmospheric Research, Boulder, Colo., January 1999.
5. Catholic University, Washington D.C., February 1999.
6. University of Texas, Austin, TX, September 1999.
7. Washington University, Washington, D.C. November 2000.
8. Cornell University, Ithaca, N.Y., November 2000.
9. University of California, Santa Cruz, April 2001.
10. Harvard University, April 2002.
11. Carnegie Institution of Washington, April 2002.
12. California Institute of Technology, March 2003.

13. Columbia University, January 2004.
14. University of Toronto, February 2004.
15. University of Maryland, February 2004.
16. George Mason University, September 2004.
17. University of California, Berkeley, March 2005.
18. George Mason University, April 2005.
19. University of Massachusetts, Amherst, November 2006. Building laboratory models of planetary cores.
20. Duke University, November 2006. Building laboratory models of planetary cores.
21. University of Illinois (UIUC), December 2007. Laboratory Models of Planetary Cores in Conducting and Quantum Liquids.
22. University of Chicago, February 2008. Laboratory models of planetary cores.
23. NASA Goddard Engineering Colloquium, Sept. 2008. Rotating fluid turbulence experiments in liquid helium, liquid nitrogen, water or liquid sodium.
24. NIST Colloquium, Sept. 2008. Laboratory models of planetary cores.
25. University of California, Berkeley, Dec. 2008. Laboratory models of planetary cores.
26. University of Oregon, Eugene, Jan. 2009. Laboratory models of planetary cores.
27. Georgia Institute of Technology, Feb. 2009. Quantum Turbulence.
28. University of Maryland, College Park, March 2010.
29. University of Michigan, Ann Arbor, September 2010. Quantum Turbulence.
30. University of California, Los Angeles, October 2010. Quantum Turbulence.
31. Wesleyan Univ., April 2011. Quantum Turbulence.
32. Washington Univ., St. Louis, November 2011. Quantum Turbulence.
33. Penn. State. Univ., January 2012. Quantum Turbulence.
34. City College of New York, February 2012. Quantum Turbulence.
35. Miami Univ. of Ohio, Benson Lecture, March 2012. Laboratory models of the Earth's Core.
36. Georg-August University, Göttingen, Germany, May 2013. Initial observations from the three meter diameter geodynamo experiment.
37. Osaka University, Osaka, Japan, July 2014. Visualization and characterization of quantum fluid flows.
38. University of Arkansas, Fayetteville, Arkansas, October 2014. Visualization and characterization of quantum fluid flows.
39. Princeton University, January 2015. Three meter model of the Earth's outer core.
40. Duke University, Raleigh, North Carolina, October 2015. Liquid Sodium Models of the Earth's Core.
41. Yale University, New Haven, CT, October 2016. Liquid Sodium Models of the Earth's Core.
42. Emory University, Atlanta, GA, November 2016.
43. University of California Irvine, Irvine, CA, January 2017. Sodium Models of the Earth's Core.
44. Harvard University, Electrification of Granular Flows 2017.

#### II.E.15. Other Invited Talks

1. Centre de Mécanique, Grenoble, July 1988.
2. University of Chicago, October 1991.
3. Bell Laboratories, January 1992.
4. Princeton University, April 1992.
5. University of Chicago, November 1992.
6. École Normale Lyon, March 1993.
7. National Institute of Standards and Technology, September 1994.
8. Georgia Institute of Technology, March 1995.
9. University of Chicago, July 1995.
10. Duke University, September 1995.

11. Los Alamos National Laboratory, February 1996.
12. Arizona State University, October 1996.
13. University of Texas, December 1996.
14. Yale University, November 1997.
15. Massachusetts Institute of Technology, February 1998.
16. George Mason University, Fairfax, Va., September 1998.
17. NASA Goddard Space Flight Center, Greenbelt, Md., November 1998.
18. Princeton Plasma Physics Laboratory, June 1999.
19. University of Chicago, June 2000.
20. LASSP Solid State Seminar, Cornell University, November 2000.
21. École Normale Supérieure, Lyon, February 2001.
22. Northwestern University, February 2002.
23. CSCAMM, University of Maryland, February 2003.
24. Drexel University, March 2003.
25. Johns Hopkins University, September 2003.
26. Potomac Geophysical Society, September 2004.
27. Dynamics Days, Long Beach, January 2005.
28. Incompressible flow, CSCAMM, University of Maryland, October 2006. A Sufficient Condition of Regularity for Axially Symmetric Solutions to the Navier-Stokes Equations.
29. Los Alamos National Laboratory, Los Alamos, New Mexico, May 2007. Visualizing the formation and dynamics of quantum defects in  $4\text{He}$  using hydrogen ice.
30. Princeton Plasma Physics Laboratory, Princeton, New Jersey, June 2007. Laboratory Models of Astrophysical and Geophysical Turbulence.
31. Osaka University, Japan, November 2007.
32. McGroddy Lecture, St. Joseph's University, Philadelphia, Pennsylvania, September 2007. Building laboratory models of planetary cores
33. University of Twente, Enschede, the Netherlands, Aug. 2008. Visualization of quantum turbulence in superfluid  $4\text{He}$
34. University of Texas, Austin, November 2008. Quantum turbulence is different from classical turbulence.
35. Weizman Institute, Israel, October 2010. Laboratory models of planetary cores.
36. KITP, University of California, Santa Barbara, February 2011. Quantum turbulence, reconnection, and quantum fluid fixed points.
37. National Center for Atmospheric Research, Boulder, March 2012. Three dimensional turbulence as modified by rotation, magnetic fields, or long range quantum order and the link to geophysical and astrophysical turbulence.
38. Carlton College, April 2012. The study of the Earth's magnetic field.
39. Quantum Fluids and Solids Conference, Isaac Newton Institute, Cambridge, U.K., October 2012. Learning about magnetic fields and vortices from experiments in metallic sodium and liquid Helium.
40. Heraeus-Seminar on Liquid Metal MHD, Bad Honnef, Germany, October 2013. A liquid metal model of the Earth's outer core.
41. Okinawa Institute of Science and Technology, Okinawa, Japan, March 2016. Visualization and characterization of quantum fluid flows.
42. Okinawa Institute of Science and Technology, Okinawa, Japan, March 2016. Liquid Sodium Models of the Earth's Core.
43. IsTerre, Grenoble, France, June 2016.
44. University of Chicago Computations in Science Seminar, Chicago, IL, January 2017. Kelvin waves, helicity and visualization of quantum fluid flows.
45. University of California Irvine, Irvine, CA, January 2017. Visualization of Quantized Vortices.
46. University of Rochester, 2017

47. University of Chicago, 2017
48. Monash University, June 2017.
49. University of California at San Diego, Oct. 2017.

## II.F. Professional Publications

### II.F.1. Reports and Non-Refereed Monographs

D.P. Lathrop, "Turbulent intermittency and Euler similarity solutions", <http://www.arxiv.org/abs/cond-mat/0311487>.

### II.F.5. Other

1. D.P. Lathrop, "Making a supersonic jet in your kitchen," *Physics* **3**, 4 (2010).
2. D.P. Lathrop and C.B. Forest, "Magnetic dynamos in the lab," *Physics Today*, **64**, 40-45 (2011). **(invited)**
3. D.P. Lathrop, B. Brawn-Cinani, "Fluid dynamics: Lord Kelvin's vortex rings," *Nature Phys.*, **9**, 207-208 (2013). **(invited)**
4. D.P. Lathrop, "Nonlinear Dynamics and Chaos: With Applications for Physics, Biology, Chemistry and Engineering book review," *Physics Today*, **68**, 54-55 (2015). **(invited)**

## II.I Significant Works in Public Media

### II.I.4. Interactive Online Database

- Initial author for two Wikipedia pages including those for the Magneto-rotational Instability and Y. Velikov

## II.J. Sponsored Research

*List source, title, amount awarded, time period and role (i.e. principal investigator or co-investigator) in reverse chronological order or its inverse. If there are co-investigators, please list these.*

### II.J.1. Grants

1. Emory University Research Committee, "Singular Gravity-Capillary Waves: Research Leading to New Technology," \$4,000, April 1, 1996 to Aug. 15, 1996. (P.I.)
2. Tidal Electric, Inc., "New Approaches to Tidal Power Production," \$7,593, Jan. 1, 1996 to Dec. 31, 1996. (P.I.)
3. Emerson Center for Scientific Computation, "Collaborative Research to Detect Transitions in Turbulent Waves States," \$4,000, with visiting scholar for 1995-1996 from Arizona State University, Prof. E.J. Kostelich. (co-P.I.)
4. GIFT summer program, through Hughes Foundation, "Surface Wave Engassing Measurements," \$6,000, May 15, 1995 to July 31, 1995. (P.I.)
5. Emory University Research Committee, "Turbulent Gravity-Capillary Waves and Gaseous Diffusion," \$4,000, April 1, 1995 to Aug. 15, 1995. (P.I.)
6. Tidal Electric, Inc., "New Approaches to Tidal Power Production," \$6,825, Sept. 1, 1994 to Aug. 30, 1995. (P.I.)
7. Emory University Research Committee, "Gravitational Effects in Aqueous Foams," \$15,000, Sept. 1, 1995 to Aug. 31, 1996. (P.I.)
8. Center for Nonlinear Studies, Los Alamos National Laboratory, "Conference: Singularities in Nonlinear Physics, Mathematics, and Engineering," \$12,000, Jan. 1, 1998 to Mar. 30, 1998 (administered by Los Alamos). (P.I.)

9. Office of Naval Research, ``Conference: Singularities in Nonlinear Physics, Mathematics, and Engineering," \$5,000, Dec. 1, 1997 to Sept. 30, 1998. (P.I.)
10. National Science Foundation, ``Development of an Experimental Dynamo: Self-generating Magnetic Fields from a Liquid Metal," \$83,279, Jan. 1997 to Dec. 1998. (P.I.)
11. Cottrell Scholars Fellowship, Research Corporation, ``Development of an Experimental Dynamo: Self-generating Magnetic Fields from a Liquid Metal," \$50,000, Oct. 1997. (P.I.)
12. NSF - Presidential Early Career Award, ``Characterization of Local Singularities: Self-focusing Wave Motion," \$500,000, Sept. 1997 to May 2002. (P.I.)
13. National Science Foundation, ``A Liquid Sodium Laboratory Model of the Earth's Outer Core," \$417,434, Aug. 1999 to July 2002. (P.I.)
14. National Science Foundation, ``Development of a Three-Meter Liquid Sodium Geodynamo Model," \$1,100,640, Sept. 2001 to Aug. 2005. (P.I.)
15. National Science Foundation, ``Liquid Sodium Geodynamo Models," \$361,531, June 2002 to June 2005. (P.I.)
16. National Science Foundation, ``Intense Energy, Vorticity, and Strain Focusing in Nonlinear Fluid Flows," \$370,000, June 2003 to May 2006. (P.I.)
17. National Science Foundation, ``French-American collaboration on MHD turbulence in liquid sodium," \$15,000, March 2002 to August 2003. (P.I.)
18. National Science Foundation, ``Supplement to Development of a Three-Meter Liquid Sodium Geodynamo Model," \$220,000, Sept. 2001 to Aug. 2007. (P.I.)
19. National Science Foundation, ``Liquid Sodium Models of Earth's Outer Core," \$467,000, July 2005 to June 2008. (P.I.)
20. National Science Foundation, ``REU - Training and Research Experiences in Nonlinear Dynamics," \$264,750, March 2006 to February 2009. (co-P.I.)
21. National Science Foundation, ``Rotating Nonlinear Flows in Normal and Quantum Fluids," \$482,454, May 2006 to April 2009. (P.I.)
22. National Science Foundation, ``Collaborative Research: CSEDI--Integrating Numerical and Experimental Geodynamo Models," \$346,000, April 2007 to March 2010. (P.I.)
23. Office of Naval Research, ``MURI: Exploiting Nonlinear Dynamics for Novel Sensor Designs," \$1,713,393, May 2007 to April 2010. (co-P.I.)
24. National Science Foundation, ``Liquid Sodium Geodynamo Models," \$417,725, June 2008 to June 2011. (P.I.)
25. National Science Foundation, ``Vortex Dynamics in Quantum and Classical Fluids," \$560,000, May 2009 to June 2013. (P.I.)
26. National Institute for Standards and Technology, ``NIST Measurement Science and Engineering Fellowship Program," \$15,000,000, January 2010 to September 2013. (P.I.)
27. National Institute for Standards and Technology, ``NIST Center for Nanoscale Science and Technology Cooperative Agreement," \$15,000,000, January 2010 to December 2015. (P.I.)
28. Julian Schwinger Foundation, ``Granular Electricity," \$165,000, August 2013 to September 2016 (P.I.)
29. National Science Foundation, EAR-1417148, ``Experiments in the three meter diameter geodynamo model," \$500,000, 2014 to 2017 (P.I.)
30. National Sciences Foundation, DMR-1407472, ``Characterization of superfluid helium dynamics using nanoparticles," \$565,033, 2014 to 2017 (P.I.)
31. National Institute for Standards and Technology, ``NIST CNST Nanoscale Science and Technology Postdoctoral and Student Researcher and Visiting Fellow Program," \$35,000,000, 2014-2019 (P.I.)
32. State of Maryland MII Program, \$115,000, 2017-2018 (P.I.)
33. Laboratory for Telecommunication Science, \$200,000, 2018-2019 (P.I.)
34. Laboratory for Telecommunication Science, \$200,000, 2019-2020 (P.I.)
35. Laboratory for Telecommunication Science, \$200,000, 2020-2021 (P.I.)

36. National Sciences Foundation, EAR-1919055, "Development of a roughened inner sphere for the three-meter model of the Earth's core," \$493,431, 2019-2022 (P.I.).

## II.K. Fellowships, Gifts and Other Funded Research

### II.K.1. Fellowships and honors

- Presidential Early Career Award, 1997.
- Cottrell Scholars Fellowship, Research Corporation, 1997.
- Richard A. Ferrell Distinguished Faculty Fellowship, 2004.
- American Physical Society Fellowship, 2005.
- Bullard Lecturer, American Geophysical Union, Dec. 2006.
- American Association for the Advancement of Science Fellowship, 2011.
- Stanley Corssin Award, American Physical Society, 2012.
- Lorentz Lecturer, American Geophysical Union, Dec. 2013.

## II.N. Patents and invention disclosures

1. P. Ullman and D.P. Lathrop, "Tidal Generator," U.S. Patent No. 5,426,332, June 20, 1995.
2. P. Ullman and D.P. Lathrop, "Tidal Power Generator, CIP," U.S. Patent No. 5,872,406, Feb. 24, 1995.
3. D.P. Lathrop, "Engassing Device," Emory University Invention Disclosure 95022, Feb. 28, 1995.
4. D.P. Lathrop and A.B. Hassam, "Sonofusion," University of Maryland Invention Disclosure PS-98-004, Jan. 9, 1998.
5. A.B. Hassam and D.P. Lathrop, "Magnetically Secured Flowing Liquid Metal Walls for High Heat Flux Processing," University of Maryland Invention Disclosure PS-99-037, June 30, 1999.
6. B.W. Zeff, R.G. McAllister, D.P. Lathrop, "Long-Range, High-Speed Micro Particle Image Velocimetry," University of Maryland Invention Disclosure PS-2001-056, December 4, 2001.
7. D.P. Lathrop, D.H. Kelley, and D.H. Martin, "Liquid metal fire suppression using liquid nitrogen," University of Maryland Invention Disclosure PS-2008-074, June 30, 2008.
8. D. P. Meichle and D.P. Lathrop, "Nanoparticle Dispersion in Cryogenic Liquids," University of Maryland Invention Disclosure, PS-2013-084, Aug. 7, 2013 and provisional Patent application June 19, 2014.
9. P. Megson, I. Shani, and D.P. Lathrop, provisional patent USPTO 62/506,951 "Semiconductor reservoir computer with auxiliary input/output hardware capable of high speed prediction, classification, control, and mimicking," May 12, 2017.
10. I. Shani, A. Restelli, and D.P. Lathrop, provisional patent USPTO 62/555,111 "Electronic Circuit Based Reservoir Computing System," Sept. 7, 2017.
11. I. Shani, A. Restelli, and D.P. Lathrop, provisional patent USPTO 62/662,119 "Electronic Circuit Based Reservoir Computing System," April 24, 2018.
12. I. Shani, A. Restelli, and D.P. Lathrop, international patent application PCT/US18/32902 "Integrated Circuit Designs for Reservoir Computing and Machine Learning" May 16, 2018.

## **III. Teaching, Mentoring and Advising.**

### III.C. Advising: Research or Clinical

*This refers to students whose projects the faculty has supervised as adviser, committee chair, or committee member (indicate role). The name of student, academic year(s) involved, and the name of institution if other than UMD should be indicated, as well as placement of the student(s), if the project is completed. List completed work first.*

#### III.C.1. Undergraduate (and \*High School)

Julie Arrighi, Barbara Brawn, Daniel Blum, Robby Blum, Remi Boros, Chris Boughter, Allison Bradford, Kevin Braga, Fernanda Calvacante DaSilva, Mary Catalano, Sarah Chang, Andrew Chen (honors mentor 2004), Christy Chew, Agnes de Montaigne, Tyler Dewey, Mariya Dryga, Skylar Eiskowitz, William Fines-Kested, Amanda Founier, Kristy Gaff, Tommy Garcia, Khurram Gillani, Savannah Gowen, Tyler Holland-Ashford, Landry Horimbere, Sereres Johnston, Hannah Kannan\*, Leah Kannan\*, Elliot Kienzle\*, Dana Kirkwood-Watts, Ben Kleber, Zach Lasner, Sean Lawton, Nicholas LeCompte, Bradley Levin, Matthew Lohr, Jon Maher, Patrick McDonough, David Meichle, Mara Mishner, Auralee Morin, Sandra Penny, Jorge Ramirez\*, Elisabeth Renner, Andrew Rhines, Robert Rohde, Charles Rouse, Julia Salevan, Marc Selbey, Liam Shaughnessy, Eric Spiegman, Matthias Steffen, Abiy Teka, Benjamin Trahan, Kaitlyn Tuley, Daniel Van Beveren, Morgan Varner, Jasmine Xu\*, Brian Vlastakis, Helena Yoest, Dagon Yuan, Benjamin Zeff

### III.C.2. Master's

- J. Errett Hogrefe: Masters Student, graduated 1997 at Emory
- Evelyn Boettcher: Masters Student, graduated 2000 at UMD
- Suchismita Roy-Choudhury: Masters Student at UMD
- Mazen M. Kharbutli: Masters Student at UMD
- Thomas van den Berg: Intern from University of Twente, Netherlands, 2002
- Dennis van Gils: Intern from University of Twente, Netherlands, 2005
- Martijn Teerhuis: Intern from University of Twente, Netherlands, 2005
- Daniel Lanterman: Masters Student at UMD, graduated 2006
- Kristina Johnson: Masters Student at UMD, graduated 2010
- Peter Megson: Masters Student at UMD, graduated 2017

### III.C.3. Doctoral

- Christopher Goodridge: Ph.D. Student at Emory, graduated 1998, currently in industry
- Nick Peffley: Ph.D. Student at UMD, graduated 2000, currently Senior Crude Options Trader at Shell
- Benjamin Zeff: Ph.D. Student at UMD, National Science Foundation Graduate Fellow (1997-2001), graduated 2003, currently Applied Imagery Scientist at US Department of Defence
- Michael Oczkowski: Ph.D. Student at UMD, jointly advised with Edward Ott for a year, most recently Director of Data Science and Chief Data Engineer at Haave, LLC
- Daniel Sisan: Ph.D. Student at UMD, graduated 2004, currently Software Engineer at Perfect Sense Digital
- Woodrow Shew: Ph.D. Student at UMD, graduated 2004, currently Associate Professor at University of Arkansas
- Kaveri Joshi: Ph.D. Student at UMD, jointly advised with K.R. Sreenivasan, currently Associate Director of Learning at EMERITUS Institute of Management
- Greg Bewley: Ph.D. Student at Yale and UMD, graduated 2007, currently Assistant Professor at Cornell University
- Doug Kelley: Ph.D. Student at UMD, graduated 2009, currently Assistant Professor at University of Rochester
- Benjamin Schwartz: Ph.D. Student at University of Marburg, one-year visit
- Matthew Paoletti: Ph.D. Student at UMD, graduated 2010, currently Senior Professional Staff at Johns Hopkins University
- Daniel Zimmerman: Ph.D. Student at UMD, graduated 2010, currently Director of Science and Engineering at Pliant Energy Systems
- Santiago Triana: Ph.D. Student at UMD, graduated 2011, currently Research Scientist at Royal Observatory of Belgium



- Enrico Fonda: Ph.D. Student at UMD, graduated 2012, jointly advised with K.R. Sreenivasan, currently Post-doc at New York University
- Cecilia Rorai: Ph.D. Student at UMD, graduated 2012, jointly advised with K.R. Sreenivasan, currently Marie Curie Research Fellow at Queen Mary University of London
- Myunghwan Park: Ph.D. Student at UMD, graduated 2014, currently ESD Design Engineer at Skyworks Solutions, Inc.
- David Meichle: Ph.D. Student at UMD, graduated 2015, currently Senior Research Scientist at Nucleus Scientific
- Freja Nordsiek: Ph.D. Student at UMD, graduated 2015, currently Post-doc at Max Plänck
- Matthew Adams: Ph.D. Student at UMD, graduated 2016, currently at Data Science Progressive Leasing
- Heidi Baumgartner Komov, current Ph.D. student at UMD
- Sarah Burnett: current Ph.D. student at UMD
- Landry Horimbere: current Ph.D. student at UMD
- Artur Perevalov: current Ph.D. student at UMD
- Rubén Rojas: current Ph.D. student at UMD
- Heidi Myers: current Ph.D. student at UMD

#### III.C.4. Post-doctoral

- William T. Shi: Post-doctoral Fellow 1994-1996 at Emory, currently Senior Member Research Staff at Philips Research
- Alexei Gumoulevski: Post-doctoral Fellow 1996-1997 at Emory and UMD, currently working in private industry
- Alfred Cawthorne: Post-doctoral Fellow 1998-1999 at UMD, currently Professor of Physics at Trevecca Nazarene University
- Nicholas Mujica: Post-doctoral Fellow 2002-2004 at UMD, currently Associate Professor, Universidad de Chile, Santiago
- Chirag Kalelkar: Post-doctoral Fellow 2006-2008 at UMD, currently Assistant Professor in Mechanical Engineering at Indian Institute of Technology Kharagpur
- Daniel Zimmerman: Post-doctoral Fellow 2010-2013 at UMD, currently Director of Science and Engineering at Pliant Energy Systems
- Santiago Triana: Post-doctoral Fellow 2011-2012 at UMD, currently Research Scientist at Royal Observatory of Belgium
- Doug Stone: Post-doctoral fellow at 2014-2016 at UMD, currently Technical Analyst at General Electric
- Itamar Shani: Post-doctoral fellow 2016-2018 at UMD, currently Algorithm Developer at Applied Materials (starting Nov. 2018)

#### III.C.5. Other Research Directions (*K-12 Interactions*)

Research mentor to high school students Hannah Kannan, Leah Kannan, Elliot Kienzle, Jorge Ramirez, and Jasmine Xu

#### III.D. Mentorship

III.D.1. Junior Faculty – wow too many to list!

### **IV. Service and Outreach**

#### IV.A. Editorships, Editorial Boards, and Reviewing Activities

*Include participation for journals and other learned publications (print and electronic).*

#### IV.A.1. Editorships

#### IV.A.2. Editorial Boards

- Editorial Board, SIAM Journal on Applied Dynamical Systems (SIADS).
- Appointed to Chaos (journal) editorial advisory board 2001-2019.

#### IV.A.3. Reviewing Activities for Journals and Presses

- Referee for National Science Foundation (Materials Research, Mathematical Sciences, Engineering, Earth Sciences), Research Corporation, Physical Review Letters, Physical Review E, Physics of Fluids, Journal of Fluid Mechanics, Europhysics Letters, Physica D, Nature, and Science.

#### IV.A.4. Reviewing Activities for Agencies and Foundations

- Review Panel Chair, NASA microgravity fluid physics program.
- APS, Division of Fluid Dynamics (APS/DFD), Acrovos prize committee - spring 2001
- External Review Committee, Laboratory for Physics, École Normale Supérieure.
- UMD-SI Seed Grant Review Panelis - 2016

### IV.B. Committees, Professional & Campus Service

#### IV.B.1. Campus Service – Department and Unit level

- Burgers Program for Fluids Dynamics Board member 2003-present.
- Physics priorities committee - 2004-2005.
- Physics APT committee - 2004-present.
- Physics Honors Program Director - 2004-2005.
- IPST Bioscience search committee - 2004-2005.
- Hosted first Burgers Visiting Professor (Bruno Eckhardt) - 2004-2005.
- Physics CSR reorganization committee - 2006.
- Director, Institute for Research in Electronics and Applied Physics (approx. 25% time) - 2005-2012.
- Numerous faculty search duties in Physics, Electrical and Computer Engineering and Materials Science - 2005-present.
- IREAP Senator 2016-2017.

#### IV.B.2. Campus Service - College

#### IV.B.3. Campus Service - University

- Maryland Day speaker - 2005.
- Maryland Day exhibitor (Smoke rings) - 2008-present
- Export Control Committee - 2010-present.
- Chair, Export Control Committee - 2012-2019.
- UMD Senate - 2010-present.
- UMD Research Council - 2012-present.
- UMD Radiation Facilities Committee -2012.
- Entrepreneurial Site Minor, Nov 2014-2017, assisted researchers with inventions (Patents/IP) to obtain grants from the state of Maryland for developing small companies.
- Member, Limited submission review, Ongoing, Review white papers for the Vice President for Research office for limited submission proposals (where only 2-3 proposals are allowed from campus).
- Primary Faculty Advisor for Assoc. Vice President Julie Lenzer (VPR office) 2017-2018.

- Chair Faculty Inquiry Committee (VPR office, confidential misconduct case).
- Chair Faculty Advisory Committee, University Senate 2019-2020.
- Chair, Export Control and International Compliance Committee 2019-present.

#### IV.B.4. Campus Service - Special Administrative Assignment

#### IV.B.5. Campus Service - Other

#### IV.B.6. Offices and Committee Memberships

#### IV.B.7. Leadership Roles in Meetings and Conferences

#### IV.B.8. Other Non-University Committees, Memberships, Panels, etc.

#### IV.B.9. Historical Committees, etc. (10+ years ago)

- IPST director search committee - Spring 2003.

#### IV.B.10. Other

- Principal organizer, workshop on "Singularities in Nonlinear Physics, Mathematics, and Engineering," Santa Fe, N.M., January 4-6, 1998.
- Principal organizer, conference, "Nonlinear Dynamics at the University of Texas: A Celebration of the 60th Birthday of H.L. Swinney," Austin, Texas, June 4-6, 2000.
- Co-Organizer (with UMD faculty in the Department of Mechanical Engineering), American Physical Society, Annual Meeting of the Division of Fluid Dynamics, Washington D.C., November 2000.
- APS, Executive Committee, Topical group on statistical and nonlinear phys. (APS/GSNP) - fall 2001-2005.
- Co-organized session at American Geophysical Union meeting, May 2002.
- Dissertation committee for Micheal Bourgoïn, École Normale Supérieure, Lyon, France, July 2003.
- APS topical group on statistical and nonlinear physics (GSNP), executive committee member at large, 2003-2004.
- APS topical group on statistical and nonlinear physics (GSNP), secretary/treasurer, 2004-2006.
- Hands-On Research in Complex Systems School, Instructor, Shanghai, China, June 2012.
- Co-organizer for Dynamics Days 2017, Silver Spring Maryland.
- APS topical group on statistical and nonlinear physics (GSNP), Vice Chair, 2017-2018.
- APS topical group on statistical and nonlinear physics (GSNP), Chair Elect, 2018-2019.
- Co-organizer symposium KRS70 in Denver in honor of K.R. Sreenivasan's 70<sup>th</sup> birthday.

### IV.C. External Service and Consulting

#### IV.C.1. Community Engagements, Local, State, National, International

- Science Demonstrations, Westover Elementary School, Silver Spring, MD, April 2007.

#### IV.C.2. International Activities

#### IV.C.3. Corporate and Other Board Memberships

- Member, Board of Directors for Recurrent Computing, Inc. 2019-present.

#### IV.C.4. Entrepreneurial Activities

- Assisted in mentoring the leads in the creation of the business ZeroK by two UMD postdoctoral scholars 2012.
- University of Maryland, Maryland Innovation Initiative site miner, November 2014-2017.
- Co-founder, Recurrent Computing, Inc. 2019.

IV.C.5. Consultancies (*to local, state and federal agencies; companies; organizations*)

IV.C.6. Historical External Service and Consulting (10+ years ago)

IV.C.7. Other

#### IV.D. Non-Research Presentations

IV.D.1. Outreach Presentations

IV.D.2 Other

#### IV.E. Media Contributions

IV.E.1. Internet

- Black and White (Interviews, Essays, and Reports), on-line July 2008.
- Voice of America feature video, on-line July 2015.

IV.E.2. TV

- “Magnetic Storm,” Appearing on PBS/BBC4 starting 2003, segments include filming in UMD labs, and interview with D.P. Lathrop.
- “Journey to the Center of the Earth,” Appearing on Discovery Channel starting 2003, segments include filming in UMD labs, and interview with D.P. Lathrop.
- National Geographic Channel documentary, “Naked Science: the Earth's Core,” starting 2005.
- National Geographic Channel documentary, “Naked Science: the Earth's Origin,” filmed June 2005, start Fall 2005.
- National Geographic Channel documentary, “Naked Science: the Earth's Magnetic field,” filmed May 2008
- Discovery Channel documentary, filmed July 2009
- History Channel, “Journey to the Earth's Core,” filmed March 2011
- Discovery Channel Canada, documentary “Daily Planet,” filmed July 2012
- Weather Channel, documentary “Secrets of the Earth,” filmed 2013
- Fox, Xploration Earth 2050 episode “High Tech Explores the Earth”, aired October 2016
- BBC, “Why Size Matters” documentary, filmed November 2016
- NKT Japanese station documentary, aired July 2017

IV.E.3. Radio

- BBC Radio interview, broadcast June 2007.
- NPR radio interview and on-line video, broadcast June 2008.
- BBC Radio interview, broadcast August 2015.

IV.E.4. Digital Media

Funsiz Physics, “The Turbulent Tangle of Quantum Vortices”, originally posted in 2016

IV.E.5. Print Media

- Science et Vie, article about the 3-meter experiment, June 2015.
- Journey to the Center of the Earth by David Whitehouse, photograph of 3-meter experiment, April 2015.

#### **V. Awards, Honors and Recognition**

V.1. Research Fellowships, Prizes and Awards

- Presidential Early Career Award, 1997.
- Cottrell Scholars Fellowship, Research Corporation, 1997.
- Richard A. Ferrell Distinguished Faculty Fellowship, 2004.

- American Physical Society Fellowship, 2005.
- Bullard Lecturer, American Geophysical Union, Dec. 2006.
- American Association for the Advancement of Science Fellowship, 2011.
- Stanley Corssin Award, American Physical Society, 2012.
- Lorentz Lecturer, American Geophysical Union, Dec. 2013.
- Distinguished Scholar Teacher, University of Maryland 2019.

#### V.2 Teaching Awards

- Recognized by Phi Beta Kappa at Emory for excellence in teaching, Spring 1995 and Spring 1997.
- Selected as Marquee Lecturer at UMD for “PHYS 105: Physics for Decision Makers: the Global Energy Crisis.”
- Selected as I-series Lecturer in first year of that program at UMD for PHYS 105.