PHILIP J. MORRISON
TAERF Professor of Physics
Department of Physics
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November 2021

Education

B.A. in Physics (Anthropology minor), University of California, San Diego, conferred June, 1972
M.S. in Physics, University of California, San Diego, conferred March, 1974
C.Phil. in Physics, University of California, San Diego, conferred June, 1978
Ph.D. in Physics, University of California, San Diego, conferred June, 1979

Employment

1992– Professor, The University of Texas at Austin, Physics Department, Austin, TX
1988–92 Associate Professor, The University of Texas at Austin, Physics Department, Austin, TX
1984–88 Assistant Professor, The University of Texas at Austin, Physics Department, Austin, TX
1983–84 Research Mathematician, University of California at Berkeley, Mathematics Dept., Berkeley, CA
1981–83 Assistant Professor, The University of Texas at Austin, Physics Department, Austin, TX
1981– Staff Scientist, The University of Texas at Austin, Institute for Fusion Studies, Austin, TX
1979–1981 Postdoctoral Research Associate, Princeton University, Plasma Physics Lab, Princeton, NJ
1972–1979 Teaching/Research Assoc., University of California, San Diego, Physics Dept., La Jolla, CA

Visiting Positions

Australian National University, Canberra, Australia, Mathematical Sciences Institute, Distinguished
   Visiting Professor (MSRVP), 2020 (Covid-19 postponed)
Mathematical Sciences Research Institute, Berkeley, CA. Research Professor/Program Organizer, 2018
Numerical Plasma Physics, Max-Planck-Institut IPP, Garching Germany. Guest Scientist, 2016-17
University of Pisa, Dipartimento di Fisica, E. Fermi, Pisa Italy. Visiting Physicist, 2015
Aix-Marseille Université, Physics Dept., Marseille, France. Visiting Professor, 2014, 2017
University of São Paulo, Applied Physics Dept., São Paulo, Brazil. Visiting Scientist, 2008, 2010,
   2011, 2013, 2015
Centre de Physique Théorique, CNRS Luminy, France. Visiting Physicist 2010, 2011, 2015
Université du Sud Toulon, Mathematics Dept., Toulon, France. Visiting Professor, 2009, 2013
University of Chicago, Mathematics Department, Chicago, IL. Visiting Mathematician, 2006
Australian National Univeristy, Physics Department, Canberra, Australia. Visiting Physicist, 2005
Cambridge University, Newton Institute, Cambridge, UK. Visiting Mathematician, 1996-97
Woods Hole Oceanographic Institution, Geophysical Fluid Dynamics Summer Program,
   Woods Hole, MA. Faculty 1990, 1993, 1995, 1998, 2003, 2008, 2011 (co-director), 2014
Max-Planck-Institut für Plasmaphysik, Theorie 1, Garching, Germany. Visiting Research Fellow 1984

The above excludes numerous visiting positions of duration shorter than 30 days.

Professional Recognition

Texas Atomic Energy Research Foundation (TAERF) Professorship 2021–
Australian National University, Canberra, Australia, Mathematical Sciences Institute, Distinguished
   Visiting Professor (MSRVP), 2020 (Covid-19 postponed)
Alexander von Humboldt Research Award (Forschungspreis career award) Supplement 2020 (15k€)
Research Professor/Organizer, Mathematical Sciences Research Institute, Berkeley, CA 2018
Faculty Research Assignment, University of Texas at Austin 2018
Fellow of Texas Atomic Energy Research Foundation Professorship 2017–

Alexander von Humboldt Research Award (Forschungspreis career award) joint with
  Carl Friedrich von Siemens Foundation, Germany 2016–2017 (65k€)
Fellow of the Elizabeth B. Gleeson Professorship in Physics 2013–2017
Cataldo e Angiola Gili Agostinelli Prize (Mathematical Physics) from the
  Accademia Nazionale dei Lincei, Italy 2013 (15k€)
Honored by Special Issue of Comm. Nonlinear Sci. and Num. Simulations. **17** (5) 2012
Chair's Fellow, The University of Texas at Austin 2011, 2016
Dean's Fellow, The University of Texas at Austin 2006
Fellow of the American Physical Society 1992
Max-Planck-Institut Scholarship, Garching, Germany 1984

Teaching Awards

College of Natural Sciences Teaching Excellence Award 2013
Props for Profs, Certificate of Appreciation for Physics 302L 2009
Dad's Association Centennial Teaching Fellowship 1988
Natural Sciences Council Teaching Excellence Award 1982
Nominations:
Regents' Outstanding Teaching Award, UT Austin Nominee for UT System's highest award 2015
Joe and Bettie Branson Ward Excellence Award, College of Natural Sciences Nominee for UT wide award 2007

Research Areas

Basic and applied plasma physics. Geophysical fluid dynamics. Mathematical physics. Kinetic theory. Dynamical Systems/Nonlinear Dynamics. Hamiltonian dynamics of few and infinite degrees of freedom. Computational science/algorithm development.

Funding

For decades I have been a key research scientist on the Institute for Fusion Studies US Department of Energy Grant No. DE-FG02-04ER54742, ~$2.5M/year.

Major Invited Talks/Lecture Series

Association of Asia-Pacific Physical Societies Plenary talk 2019 (Nov)
MSRI Introductory Workshop 2 One Hour lectures 2018
American Physical Society One Hour Review Talk 2016
European Physical Society Invited Talk 2016
17th International Conference on Plasma Physics. Lisbon Portugal. Invited Talk 2015
XXXIX Summer School on Mathematical Physics, INdAM and GNFM, Ravello, Italy 2014
American Physical Society One Hour Tutorial Talk 2004
American Physical Society One Hour Mini-Conference Talk 2002
American Physical Society Centennial Invited Address 2000
Geophysical Fluid Dynamics Principal Lecturer, Woods Hole, MA 1993
American Physical Society Invited Talk 1993
American Physical Society Invited Talk 1986
American Physical Society Invited Talk 1981

Invited Talks

Approximately 10–15 invited talks per year at conferences and universities throughout the world.

Contributed Papers

Over 250 papers since 1999 at meetings such as APS, SIAM, etc.

Editorial Duties

Chaos, Editorial Advisory Board
Communications on Nonlinear Science and Numerical Simulations, International Advisory Board
European Journal of Physics D, Guest Editor for Special Issue
CRC Press Book Series in Plasma Physics, Editor

Departmental/University Service

College of Natural Sciences Promotion and Tenure Committee 2019–2022
American Physical Society Bridge Proposal contributor 2020
American Physical Society Inclusion, Diversity, and Equity Alliance, PI of successful proposal 2020
Departmental Diversity and Inclusion Committee 2020
Departmental Climate Change Committee (chair) 2019 –
Recruitment Committee 2018, 2019 (chair), 2021 (chair)
Search Committee (elected) for Dean of the College of Natural Sciences 2017–2018
Associate Chair for Graduate Affairs 2013–2016
Associate Chair for Undergraduate Affairs 2010–2013
College of Natural Sciences Course and Curriculum Committee 2013–2016
Graduate Studies Subcommittee, 1981–1983, 2010–2013, 2013–2016 (chair), 2017, 2018, 2019, 2020
Budget Council Advisory Committee (elected) 1994–1998 (chair), 2009–2013, 2015–2016, 2018
Undergraduate Affairs Committee 2008–2010, 2010–2013 (chair)
Graduate Curriculum Revision Committee (GRACL), 1990–1991 (chair)
Chair's Operations Committee and Management Committee 2008–2015
Undergraduate Advisory Committee 1999–
Graduate Welfare Committee, 2002–2011 (chair)

Community Service

Below is a sampling of community service.

Meeting Organization/Committees

Flash GAMP An online seminar series on: *Geometric Algorithms and Methods in Physics*, Organizer, June 2021
Aspen Center for Physics *Transport and Mixing of Tracers in Geophysics and Astrophysics*, added   Co-Organizer, June 2021
Friday (Covid Induced) Seminar Series. A continuing international interdisciplinary seminar series open to the public running from April 2020 – present
Mathematical Sciences Research Institute Program *Hamiltonian Systems, from Topology to Applications through Analysis*, Co-PI/Co-Organizer, Berkeley, CA 2017–2018
2nd *Geometric Algorithms and Methods for Plasma Physics (GAMPP)* Workshop, Co-Organizer 2016
National Science Foundation/DOE bridge program, Panel Member 2016
Department of Energy, Frontiers of Physics, Sub-panel Chair/Report Author 2015–2017
Center for Nonlinear Studies, External Advisory Committee, Los Alamos National Laboratory, New Mexico 2015, 2018, 2021
SIAM Dynamical Systems, Snowbird Minisymposium, Co-Organizer 2003, 2007, 2011, 2015
Sherwood Theory Meeting, Corpus Christi, TX, Co-Organizer 2003
Geophysical Fluid Dynamics Summer School, Woods Hole Ocean. Inst. Steering Committee 1998–
Sherwood Theory Meeting, Dallas, TX, Co-Organizer 1994
U. S. Department of Energy Magnetic Fusion Science Fellowship Program, Local Coordinator 1996–
Dynamics Days Texas, Austin, TX. Co-Organizer 1992
Aspen Center for Physics *Coherence and Chaos, Complex Dynamical Systems*, Co-Organizer 1990, 1991
University Fusion Association (elected) 1991
Sherwood Executive Committee (elected) 1990

American Physical Society Division of Plasma Physics, Program Committee 1990, 2000
NSF and DOE Panels, various

<u>Prize Committees</u>

Maxwell Prize Committee, American Physical Society 1998, 1999 (chair)
Fluid Mechanics Prize (Otto Laporte Lecture), American Physical Society, 2005, 2006
Fellowship Committee, APS Division of Plasma Physics, 2007

Professional Society Memberships (past and present)

American Physical Society
American Geophysical Union
American Mathematical Society

Undergraduate Students Supervised: Honors Theses/Summer Interns

John Hartman, 1991
Thesis Title: "General Energy Expressions for Perturbations of Two-Dimensional Inviscid Incompressible
Fluid Equilibria: Negative Energy Modes"
Graduate School Attended: California Institute of Technology

Peter Abbamonte, 1993
Thesis Title: "Constructing Symplectic Maps for Application to Magnetostatics and Hamiltonian Mechanics"
Graduate School Attended: University of Illinois, Urbana-Champaign

David Strozzi, 1997
Department of Energy Summer Intern
Undergraduate School: Harvard University
Graduate School Attended: Massachusetts Institute of Technology

Ilya Osipenkov, 2000
Thesis Title: "Diffusion in Chaotic Systems"
Graduate School Attended: University of California at Berkeley

Zachary Stone, 2012
Thesis Title: "Self-Consistent Chaos and the Homoclinic Tangle in the Vlasov-Poisson System"
Graduate School Attended: University of California at Berkeley

Blagoje Djordjevic, 2013
Thesis Title: "Internal Waves and Tidal Conversion from a Finite Submarine Ridge"
Graduate School Attended: University of California at Berkeley

Santiago Jose Benavides, 2015
Thesis Title: "Riemann Ellipsoids: Hamiltonian Formulation and Stability Analysis"
Graduate School Attended: Massachusetts Institute of Technology

James Dix, 2017
Thesis Title: "Extra invariants in Hamiltonian Systems"
Graduate School Attended: University of California at Berkeley

Zel Hurewitz, 2019 (Jackson School)
Thesis Title: "High-Resolution, Earth-like Rayleigh Number Viscoplastic Spherical Convection Models"
Graduate School Attended: Scripps Institution of Oceanography UCSD

Doctoral Students Supervised

1. Chi-Tien Hsu, Ph.D. conferred 1986
   Dissertation Title: "Reduced Fluid Descriptions of Toroidally Confined Plasma
   with Finite Temperature Effects"
   Postgraduate employment: Postdoc, Massachusetts Institute of Technology, Cambridge, MA

2. Hungtae Kook, Ph.D. conferred 1989
   Dissertation Title: "Chaotic Transport in Hamiltonian Dynamical Systems
   with Several Degrees of Freedom"
   Postgraduate employment: Postdoc, Stevens Institute of Technology, Hoboken, NJ
   Present address: Korea Advanced Institute of Science, Seoul, Korea

3. Qi (Keith) Chen, Ph.D. conferred 1989
   Dissertation Title: "Resonances, the Devil's Staircase and Transport in
   Area-Preserving Maps"
   Postgraduate employment: Postdoc, University of Maryland, College Park, MA
   Present address: Director of Quantitative Research, AIG Investments, New York, NY

4. Xiao Ling Chen, Ph.D. conferred 1991
   Dissertation Title: "Magnetohydrodynamic Studies of Ideal and Resistive Tearing Modes
   with Equilibrium Shear Flow"
   Postgraduate employment: Postdoc, Cornell University, Ithaca, NY

5. Leon Ofman, Ph.D. conferred 1992
   Dissertation Title: "Resistive Magnetohydrodynamic Studies of Tearing Mode Instabilities with
   Equilibrium Shear Flow and Magnetic Reconnection"
   Postgraduate employment: Postdoc, NASA-Goddard Space Flight Center, Greenbelt, MD
   Present address: Professor, Catholic University, Washington, DC and NASA-Goddard Space Flight
   Center, Greenbelt, MA

6. Christopher Kueny, Ph.D. conferred 1993
   Dissertation Title: "Nonlinear Instability and Chaos in Plasma Wave-Wave Interactions"
   Postgraduate employment: Postdoc, Lawerence Livermore National Laboratory
   Present address: Hewlett Packard, Albuquerque, NM

7. Diego Del-Castillo-Negrete, Ph.D. conferred 1994
   Dissertation Title: "Dynamics and Transport in Rotating Fluids and Transition to Chaos in Area
   Preserving Nontwist Maps"
   Postgraduate employment: Postdoc, T-Division of the Los Alamos National Laboratory
   Present address: Senior Research and Development Staff, Oak Ridge National Laboratory, Oak
   Ridge, TN

8. Raul Acevedo, Ph.D. conferred 1995
   Dissertation Title: "Lie Group Analysis of Plasma-Fluid Equations"
   Present address: Senior Engineering Systems Analyst, McDermott Inter. Ltd, Houston, TX

9. Bradley Shadwick, Ph.D. conferred 1995
   Dissertation Title: "On the Hamiltonian Structure of the Linearized Maxwell-Vlasov System"
   Postgraduate employment: Postdoc, University of California at Berkeley
   Present address: Professor, University of Nebraska, Lincoln, NB

10. Nikhil Padhye, Ph.D. conferred 1998
    Dissertation Title: "Topics in Lagrangian and Hamiltonian Fluid Dynamics: Relabeling Symmetry and Ion-Acoustic Wave Stability"
    Postgraduate employment: Postdoc, University of Delaware, Newark, DE
    Present address: Assoc. Professor, The University of Texas Health Science Center, Houston, TX

11. Jean-Luc Thiffeault, Ph.D. conferred 1998
    Dissertation Title: "Classification, Casimir Invariants, and Stability of Lie-Poisson Systems"
    Postgraduate employment: Postdoc, Columbia University, New York, NY
    Present address: Professor, University of Wisconsin, Madison, WI.

12. Ethan Honda, Ph.D. conferred 2000
    Dissertation Title: "Resonant Dynamics within the Nonlinear Klein-Gordon Equation: Much ado about Oscillons"
    (co-advisor Prof. M. Choptuik, University of British Columbia, Canada)
    Postgraduate employment: Postdoc, Austin Research Laboratory, Austin, TX

13. Tom Yudichak, Ph.D. conferred 2001
    Dissertation Title: "Weakly Nonlinear Vlasov-Poisson Dynamics"
    Postgraduate employment: Postdoc, Austin Research Laboratory, Austin, TX
    Present address: Research scientist, Austin Research Laboratory, Austin, TX

14. Vivek Narayanan, Ph.D. conferred 2002
    Dissertation Title: "Some Aspects of the Geometry of Poisson Dynamical Systems"
    Postgraduate employment: Asst. Professor, Moberly Area Community College, Moberly, MO
    Present address: Senior Lecturer, Rochester Institute of Technology, Rochester, NY

15. Alex Wurm, Ph.D. conferred 2002
    Dissertation Title: "Renormalization Group Applications in Area-Preserving Nontwist Maps and Relativistic Quatum Field Theory"
    (co-advisor Prof. C. Dewitt-Morette, University of Texas, Austin)
    Postgraduate employment: DOE Postdoctoral Fellow, University of Texas at Austin, Austin, TX
    Present address: Professor, Western New England College, Springfield, MA

16. Jason Ventrella, Ph.D. conferred 2002
    Dissertation Title: "A Numerical Treatment of Spin-1/2 Fields Coupled to Gravity"
    (co-advisor Prof. M. Choptuik, University of British Columbia, Canada)
    Postgraduate employment: Postdoc, Louisiana State University, Baton Rouge, LA
    Present address: Senior Principal Data Scientist, MITRE, Washington, D.C.

17. Christopher Jones, Ph.D. conferred 2003
    Dissertation Title: "Closures of the Vlasov-Poisson System"
    Postgraduate employment: Postdoc, Los Alamos National Laboratory, Los Alamos, NM]

18. Scott Charles Noble, Ph.D. conferred 2003
    Dissertation Title: "A Numerical Study of Relativistic Fluid Collapse"
    (co-advisor Prof. M. Choptuik, University of British Columbia, Canada)
    Postgraduate employment: Postdoc, University of Illinois, Urbana-Champaign, IL
    Present address: Professor, University of Tulsa, Tulsa, OK

19. Amit Apte, Ph.D. conferred 2004
    Dissertation Title: "Numerical Studies of the Standard Nontwist Map and a Renormalization Group Framework for Breakup of Invariant Tori "
    Postgraduate employment: Postdoc, University of North Carolina, Chapel Hill, NC
    Present address: Assoc. Professor, International Centre for Theoretical Sciences (ICTS), Tata Institute of Fundamental Research, Bangalore, India

20. Todd Krause, Ph.D. conferred 2004
    Dissertation Title: "Darwinian Evolution: the Mutation of a Weakly Relativistic Lagrangian"
    Postgraduate employment: Postdoc, Linguistic Department, University of Texas, Austin, TX

21. Evstati G. Evstatiev, Ph.D. conferred 2004
    Dissertation Title: "A Model for Multi-Wave Beam Plasma Interaction"
    Postgraduate employment: Postdoc, Los Alamos National Laboratory, Los Alamos, NM

22. Sungwhan Jung, Ph.D. conferred 2005
    Dissertation Title: "Statistics of Turbulence in a Rapidly Rotating System"
    (co-advisor Prof. H. Swinney, University of Texas, Austin)
    Postgraduate employment: Postdoc/Instructor, Courant Institute of Mathematical Sciences, New York University, NY
    Present address: Professor, Cornell University, Ithaca, NY

23. Kathrin Fuchss, Ph.D. conferred 2006
    Dissertation Title: "Periodic Orbit Bifurcations and Breakup of Shearless Invariant Tori in Nontwist Systems"
    Postgraduate employment: Researcher, Veritas Inc., Houston, TX

24. Takahide Okabe, Ph.D. conferred 2008
    Dissertation Title: "Spatially-Homogeneous Vlasov-Einstein Dynamics"
    Postgraduate employment: Tokyo Wall Street, Tokyo, Japan

25. George I. Hagstrom, Ph.D. conferred 2011
    Dissertation Title: "Infinite-Dimensional Hamiltonian Systems with Continuous Spectra: Perturbation Theory, Normal Forms, and Landau Damping"
    Postgraduate employment: Postdoc/Instructor, Courant Institute of Mathematical Sciences, New York University, NY
    Present address: Research Scientist, Ecology and Evolutionary Biology and GFDL, Princeton University, Princeton, NJ

26. Xiangrong Fu, Ph.D. conferred 2013
    Dissertation Title: "Turbulent Particle and Thermal Transport in Magnetized Plasmas"
    (co-advisor Prof. W. Horton, University of Texas, Austin)
    Postgraduate employment: Postdoc, Los Alamos National Laboratory, NM
    Present address: Research scientist, New Mexico Consortium, Los Alamos, United States

27. Jingfei Ma, Ph.D. conferred 2015
    Dissertation Title: "The Macro- and Micro-Instabilities in the Pedestal Region of the Tokamak"
    (co-advisor Prof. W. Horton, University of Texas, Austin)
    Postgraduate employment: Google Inc. Mountain View, CA

28. Manasvi Lingam, Ph.D. conferred 2015
    Dissertation Title: "Hamiltonian and Action Principle Formulations of Plasma Fluid Models"
    Postgraduate employment: Postdocs, Princeton University, NJ and Harvard University, Cambridge, MA
    Present address: Asst. Professor, Florida Institute of Technology, Melbourne, FL

29. Eric D'Avignon, Conferred 2015
    Dissertation Title: "Aspects of Relativistic Hamiltonian Physics"
    Postgraduate employment: University of Texas at Austin, Austin, TX

30. Ehab Ali Hassan, Ph.D. conferred 2015
    Dissertation Title: "Plasma Turbulence in the Equatorial Electrojet: Observations, Theories, Models, and Simulations"
    (co-advisor Prof. W. Horton, University of Texas, Austin)
    Postgraduate employment: Oden Institute, University of Texas at Austin, Austin, TX

31. Ioannis Keramidas Charidakos, Ph.D. conferred 2016
    Dissertation Title: "Applications of Hamiltonian Theory to Plasma Models"
    Postgraduate employment: Postdoc, University of Colorado, Boulder, CO

32. Christopher Timothy Curry, Ph.D. conferred 2016
    Dissertation Title: "Transport in Higher Dimensional Phase Spaces"
    Postgraduate employment: Lecturer, Southwest University, Georgetown, TX

33. Akarsh Simha, Ph.D. conferred 2017
    Dissertation Title: "Brownian Motion in Liquids: Theory and Experiment"
    (co-advisor Prof. M. Raizen, University of Texas, Austin)
    Postgraduate employment: Apple Inc., Cupertino, CA

34. Frank Moonyoung Lee, Ph.D. conferred 2017
    Dissertation Title: "Determination of the Energy Flux of Internal Gravity Waves"
    Postgraduate employment: University of Nebraska, Lincoln, NE

35. George Miloshevich Ph.D. conferred 2018
    Dissertation Title: "Hamiltonian Description of Hall and Sub-Electron Scales in Collisionless Plasmas with Reduced Fluid Models"
    Postgraduate employment: Postdoc, CNRS, Nice, France

36. David Gogichaishvili Ph.D. conferred 2018
    Dissertation Title: "Linear and Nonlinear Processes in MHD shear Flows: Their Special Nature, Interplay and Consequences"
    (co-advisor Prof. W. Horton, University of Texas, Austin)
    Postgraduate employment: unknown

37. Tess Bernard Ph.D. conferred 2019
    Dissertation Title: "Discontinuous Galerkin Modeling of Plasma Turbulence in a Simple Magnetized Torus"
    (co-advisor Dr. Greg Hammett, Princeton Plasma Physics Laboratory)
    Postgraduate employment: Postdoc, General Atomics, San Diego, CA
    Present address: Lecturer II, University of San Diego, San Diego, CA

38. Benjamin Stephens Ph.D. conferred 2019
    "Abrupt Climate Change and Rainfall Partitioning in Atmospheric Models"
    (co-advisor Dr. Charles Jackson, Jackson School)
    Postgraduate employment: Postdoc, University of Wisconsin Milwaukee, WI

39. Jeffrey Heninger Ph.D. conferred 2020
    "A Hamiltonians Magnetic Monopoles and An Integral Transform for Kinetic Plasmas"
    Postgraduate employment: Postdoc, Sorbonne University, Paris, France

10 of my Ph.D. students presently hold faculty appointments.

In addition to the above I had significant involvement in advising the following Ph.D. students:

Taina Kurki-Suonio, Ph.D. conferred 1989
Dissertation Title: "Non-linear Self-focusing of Optical Beams in Plasmas"
Present address: Helsinki University of Technology, Finland

Xiang Ning Su, Ph.D. conferred 1992
Dissertation Title: "Drift Wave Coherent Vortex Structures in Inhomogeneous Plasmas"
Present address: IBM Research Center, Austin, TX

Alexander R. R. Casti, Ph.D. conferred 1998
Dissertation Title: "Studies in Hydrodynamic Stability: Double-Diffusive Oscillations and Explosive Gravitational Instability of Interpenetrating Fluids"
Present address: Laboratory of Applied Mathematics, Mount Sinai School of Medicine, New York, NY

Masters Students Supervised

Nikhil Padhye, M.S. conferred 1994; admitted to candidacy
Dissertation Title: "Statistical Mechanics of 2-D Fluids"
Present address: Department of Health Sciences, University of Houston, TX

Yurun Liu, M.S. conferred 2009
Dissertation Title: "Nontraditional Approximation in Geophysical Fluid Dynamics"
Present address: unknown

Peter Andrew Eschbacher, M.S. conferred 2009
Dissertation Title: "Quantifying Stickiness in 2D Area-Preserving Maps by Means of Recurrence Plots"
Present address: Data Scientist, Washington, DC

Postdoctoral Fellows Supervised at University of Texas

Huanchun Ye, 1991–1993
Present Position: Wall Street, New York, NY

Neil Balmforth, 1994–1996
Present Position: Professor of Mathematics
University of British Columbia, Vancouver, Canada

John Bowman, 1995–1997
Present Position: Professor of Mathematics
University of Alberta, Edmonton, Canada

Alexander Wurm, 2002–2005
Present Position: Professor of Physics (Department Chair)
Western New England College, Springfield, MA

Research Papers

1. P. J. Morrison and D. A. Mendis, "On the Fine Structure of Cometary Plasma Tails," Astrophysical Journal **226**, 350–354 (1978).

2. P. J. Morrison, W. B. Thompson, and P. R. Williamson, "Current Collection by a Long Wire in Near-Earth Orbit," IEEE Transactions on Plasma Science, **PS-6**, 435–441 (1978).

3. D. A. Mendis and P. J. Morrison, "On the Size of the Cometary Tail Magnetic Field," Monthly Notices Royal Astronomical Soc. **188**, 727–733 (1979).

4. P. J. Morrison and J. M. Greene, "Noncanonical Hamiltonian Density Formulation of Hydrodynamics and Ideal Magnetohydrodynamics," Physical Review Letters **45**, 790–794 (1980); **48**, 569 (1982).

5. P. J. Morrison, "The Maxwell-Vlasov Equations as a Continuous Hamiltonian System," Physics Letters A **80**, 383–386 (1980).

6. A. Weinstein and P. J. Morrison, "Comments on the Maxwell-Vlasov Equations as a Continuous Hamiltonian System," Physics Letters A **86**, 235–236 (1981).

7. P. J. Morrison, "Poisson Brackets for Fluids and Plasmas," in Mathematical Methods in Hydrodynamics and Integrability in Dynamical Systems, eds. M. Tabor and Y. Treve, American Institute of Physics Conference Proceedings No. 88, New York (1982) pp. 13–46.

8. A. N. Kaufman and P. J. Morrison, "Algebraic Structure of the Plasma Quasilinear Equations," Physics Letters A **88**, 405–406 (1982).

9. J. D. Meiss and P. J. Morrison, "Nonlinear Electron Landau Damping of Ion-Acoustic Solitons," Physics of Fluids **26**, 983–989 (1983).

10. P. J. Morrison, J. D. Meiss, and J. R. Cary, "Scattering of Regularized Long-Wave Solitary Waves," Physica D **11**, 324–336 (1984).

11. P. J. Morrison and R. D. Hazeltine, "Hamiltonian Formulation of Reduced Magnetohydrodynamics," Physics of Fluids **27**, 886–897 (1984).

12. J. E. Marsden, P. J. Morrison, and A. Weinstein, "Hamiltonian Structure of the BBGKY Equations," Contemporary Mathematics **28**, 115–124 (1984).

13. J. E. Marsden and P. J. Morrison, "Noncanonical Hamiltonian Field Theory and Reduced MHD," Contemporary Mathematics **28**, 133–150 (1984).

14. P. J. Morrison, "Bracket Formulation for Irreversible Classical Fields," Physics Letters A **100**, 423–427 (1984).

15. R. D. Hazeltine, D. D. Holm, J. E. Marsden, and P. J. Morrison, "Generalized Poisson Brackets and Nonlinear Liapunov Stability-Application to Reduced MHD," International Conference on Plasma Physics Proceedings, eds. M.Q. Tran and M.L. Sawley, (Ecole Polytechnique Federale de Lausanne, Lausanne, (1984) 1, 203.

16. P. J. Morrison, I. L. Caldas, and H. Tasso, "Hamiltonian Formulation of Two-Dimensional Gyroviscous MHD," Zeitschrift für Naturforschung a **39**, 1023–1027 (1984).

17. M. Kotschenreuther, R. D. Hazeltine, and P. J. Morrison, "Nonlinear Dynamics of Magnetic Islands with Curvature and Pressure," Physics of Fluids **28**, 294–302 (1985).

18. M. Kotschenreuther, A. Y. Aydemir, D. C. Barnes, J. R. Cary, J. D. Hanson, R. D. Hazeltine, and P. J. Morrison, "Magnetic Islands in Toroidally Confined Plasmas," Plasma Phys. Controlled Nuclear Fusion Research **2**, 223–230 (1985) (International Atomic Energy Agency publication.)

19. R. D. Hazeltine, M. Kotschenreuther, and P. J. Morrison, "A Four-Field Model for Tokamak Plasma Dynamics," Physics of Fluids **28**, 2466–2477 (1985).

20. D. Pfirsch and P. J. Morrison, "Local Conservation Laws for the Maxwell-Vlasov and Collisionless Guiding-Center Theories," Physical Review A **32**, 1714–1721 (1985).

21. R. D. Hazeltine, D. D. Holm, and P. J. Morrison, "Electromagnetic Solitary Waves in Magnetized Plasmas," Journal of Plasma Physics **34**, 103–114 (1985).

22. D. E. Hastings, R. D. Hazeltine, and P. J. Morrison, "Ambipolarons: Solitary Wave Solutions for the Radial Electric Field in a Plasma," Physics of Fluids **29**, 69–75 (1985).

23. P. J. Morrison, "A Paradigm for Joined Hamiltonian and Dissipative Systems," Physica D **18**, 410–419 (1986).

24. P. J. Morrison and S. Eliezer, "Spontaneous Symmetry Breaking and Neutral Stability in the Noncanonical Hamiltonian Formalism," Physical Review A **33**, 4205–4214 (1986).

25. J. E. Marsden, R. Montgomery, P. J. Morrison, and W. B. Thompson, "Covariant Poisson Brackets for Classical Fields," Annals of Physics **169**, 29–47 (1986).

26. R. D. Hazeltine, J. D. Meiss, and P. J. Morrison, "Analytic Theory of the Nonlinear $m = 1$ Tearing Mode," Physics of Fluids **29**, 1633–1640 (1986).

27. C. T. Hsu, R. D. Hazeltine, and P. J. Morrison, "A Generalized Reduced Fluid Model with Finite Ion-Gyroradius Effects," Physics of Fluids **29**, 1480–1487 (1986).

28. H. L. Berk, J. P. Freidberg, X. Llobet, P. J. Morrison, and J. A. Tataronis, "Existence and Calculation of Sharp Boundary MHD Equilibrium in Three-Dimensional Toroidal Geometry," Physics of Fluids **29**, 3281–3290 (1986).

29. R. D. Hazeltine, M. Kotschenreuther, and P. J. Morrison, "Erratum/Addendum: Four-Field Model for Tokamak Plasma Dynamics," Physics of Fluids **29**, 341 (1986).

30. R. D. Hazeltine, C. T. Hsu, and P. J. Morrison, "Hamiltonian Four-Field Model for Nonlinear Tokamak Dynamics," Physics of Fluids **30**, 3204–3211 (1987).

31. M. Kotschenreuther, A. Y. Aydemir, R. Carrera, R. D. Hazeltine, J. D. Meiss, and P. J. Morrison, "Nonlinear Toroidal Plasma Dynamics by Reduced Fluid Models," Plasma Physics and Controlled Nuclear Fusion Research **2**, 149–155 (1987) (International Atomic Energy Agency publication).

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