

# Curriculum Vitae

## Susan Friedlander

### Professional Addresses:

Department of Mathematics  
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University of Southern California  
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### Education:

1967	B.SC.	London University
1970	M.S.	M.I.T.
1972	Ph.D	Princeton University

### Employment:

1972-74	Visiting Member, Courant Institute of Mathematical Sciences
1974-75	Instructor, Princeton University, Mathematics Department
1975-82	Assistant Professor, University of Illinois at Chicago, Math, Stat., and Comp. Sci. Dept.
1982-89	Associate Professor, University of Illinois at Chicago, Math, Stat., and Comp. Sci. Dept.
1989-08	Professor, University of Illinois at Chicago, Math, Stat., and Comp. Sci. Dept.
2007-	Professor, University of Southern California
2008-	Director, Center for Applied Mathematical Sciences, USC

### Academic honors / Awards / Recognition:

1967-69	Kennedy Memorial Scholarship
1985	Lecturer in a series of seven distinguished women scientists, Science Museum of Minnesota
1991	Plenary lecturer at the Cambridge Conference in honor of Dame Mary Cartwright
1993	Invited hour address at AMS regional meeting in DeKalb, Il.
1993	N.S.F. Visiting Professorship for Women Award
1995	Elected Honorary Member, Moscow Mathematical Society
1998	Medal of Institut Henri Poincare
1998	Gauthier Villars Prize for Nonlinear Analysis
1999	Plenary lecturer at the SIAM Annual Meeting, Atlanta
2003	University of Illinois Senior Scholar Award
2012	Elected Fellow, SIAM
2012	Elected Fellow, AMS
2012	Elected Fellow, American Association for the Advancement of Science

### **Grant Support:**

1975-2019	N.S.F. summer grants
1982-83	N.S.F. sabbatical grant
1988	N.S.F. U.S.-Swiss Cooperative Science Program
1991-92	N.S.F. U.S.-U.S.S.R. Cooperative Science Program
1993-96	N.S.F. U.S.-Russian Program
1993-95	N.S.F. Special Projects (with R. MacPherson)
1993-95	N.S.F. Visiting Professorship for Women
2002-03	Indo- U.S. Forum Grant (with Kalyan Sinha)
2006	N.S.A. Workshop Grant
2007-09	C.R.D.F. U.S.-Russian Grant (with V. Yudovich)
2011-14	XSEDE supercomputer grant (with F. Jacobitz)

### **Editorial Positions:**

1991-96	Editorial Board, Geophysical and Astrophysical Fluid Dynamics
1992-98	Editorial Board, SIAM Journal of Mathematical Analysis
1993-16	Editorial Committee, Notices of the AMS
1996-05	Chair, Colloquium Publications of the AMS
2010-	Associate Editor, Journal of Mathematical Fluid Mechanics
2014-	Editorial Board, SIAM J. of Multiscale Modeling and Simulation
2005-	Editor in Chief, Bulletin of the AMS

### **Visiting Positions:**

1977-78	Visiting Lecturer, Oxford University
1978	Visitor at D.A.M.T.P., Cambridge University
1982-83	Professeur Associe, University of Paris VI
1982-83	Visiting Member, I.H.E.S., Paris
1983	Visiting Fellow, Max Planck Institute, Bonn
1984	Visiting Fellow, E.T.H., Zurich
1985	Visiting Member, I.H.E.S., Paris
1985-86	Visiting Fellow, Princeton University
1986	Visiting Fellow, E.T.H., Zurich
1986	Visiting Scholar, M.S.R.I., Berkeley
1987	Visiting Member, I.H.E.S., Paris
1988	Visiting Fellow, E.T.H., Zurich
1988	Visiting Member, I.H.E.S., Paris
1988	Visitor, Institute of Physics of the Earth, Acad. Of Sciences USSR, Moscow
1989	Visiting Member I.H.E.S., Paris
1989	Visitor, I.P.E., Academy of Sciences, U.S.S.R., Moscow
1990	Visiting Member, I.H.E.S., Paris
1991	Visiting Fellow, E.T.H., Zurich
1992	Visiting Member, Newton Institute, Cambridge
1993	Visiting Member, I.H.E.S., Paris
1994	Visiting Professor, Brown University
1994	Visiting Professor, Northwestern University
1995	Visiting Member, MSRI, Berkeley
1996, 97, 01	Visitor, Center for Interdisciplinary Science, Heidelberg

1997 Research in Pair Program, Oberwolfach  
 1998 Visiting Member, I.H.E.S., Paris  
 1999 Member, I.A.S., Princeton  
 1999 Research Professor, M.S.R.I., Berkeley  
 2000 Visiting Member, ETH, Zurich  
 2000 Senior Visiting Fellow, Newton Institute, Cambridge  
 2002 Visiting Member, I.H.E.S., Paris  
 2003 Visiting Fellow, E.T.H., Zurich  
 2004 Visiting Member, I.H.E.S., Paris  
 2004 Professeur Invite, E.N.S.-Cachan, Paris  
 2005 Member, IAS, Princeton  
 2006 Visiting Member, I.H.E.S., Paris  
 2007 Visiting Member, Fields Institute, Toronto  
 2007 Visiting Member, M.S.R.I., Berkeley  
 2009 Visiting Fellow, Trinity College, Cambridge

**Professional Activities:**

*Officer of A.M.S.*

Associate Secretary, American Mathematical Society, 1996-2010  
 Member, Council of the American Mathematical Society, 1996-

*Committees and Evaluation Panels*

Member-at-large, American Mathematical Society Council, 1983-85  
 Regional Coordinator for Committee on Special Funds for I.C.M, 1984-86  
 AMS, Committee on Membership, 1990-95  
 AMS fSU Aid Committee, Chairman of library subcommittee, 1992-97  
 International Science Foundation Grants Selection Panel, Co-chairman, 1993-94  
 Member, External Review Committee of the Mathematics Department, University of Maine, 1997  
 NSF Applied Math Proposal Review Panel, 1997-1998, 2013  
 Member, Joint Policy Board for Mathematics, 1998-2000  
 Member, Scientific Advisory Committee, MSRI, 2001-2006  
 CRDF Proposal Review Panel, 2005  
 Member, External Review Committee, Math Department, Georgia Tech, 2007  
 Member, External Review Committee, Math Department, Yale University, 2008  
 Member, Board of Mathematical Sciences and their Applications of the National Academies, 2008-2011  
 Member, Scientific Advisory Committee, CRM, Montreal, 2010-2014  
 Reviewer, Radcliffe Institute Fellowship Program, 2010  
 Reviewer, Simons Foundation, Math and Physical Sciences, 2010-14  
 Nominating Committee, American Math Society, 2012-2015  
 Member, Scientific Program Committee, ICIAM 2012-2015  
 Steering Committee, Mathematical Congress of the Americas, 2011-2013  
 Member, Section A Steering Committee, American Association for the Advancement of Science, 2013-2016  
 Chair, Executive Committee, Mathematical Council of the Americas, 2013-2019  
 Member, MIT Math Department Visiting Committee, 2013-2017  
 Member, Computer Science Department Review, USC 2014  
 Member, External Review, Math Department UCSC, 2014  
 Member, External Review, Math Department University of Nebraska, 2014  
 Member, External Review, Math Department, VaTech, 2015

## **Professional Organization:**

### *Conference Organization*

AMS - Benelux Meeting Program Committee, 1995-96  
AMS - South Africa Joint Meeting Program Committee, 1996-97  
AMS - Australia Joint Meeting Program Committee, 1998-99  
AMS - Spain Joint Meeting Program Committee, 2001-03  
AMS - India Joint Meeting Program Committee, 2001-03  
AMS - German-Austrian Joint Meeting Program Committee, 2002-05  
AMS - Poland Joint Meeting Program Committee, 2005-07  
AMS - Winter Meeting (New Orleans) Program Committee, 2006-07  
AMS - Shanghai Joint Meeting Program Committee, 2006-08  
AMS - Mexican Joint Meeting Program Committee, 2009-10  
MCA 2013 - Mathematical Congress of the Americas, Program Committee, 2013  
ICIAM - Program Committee, 2013-15  
MCA 2017 - Mathematical Congress of The Americas, Steering Committee, 2017

### *Workshop Organization*

Co-organizer, U.S.-Swiss conference “Internal waves in geophysical contexts”, 1988  
Co-organizer, U.S.-Russian conference “MHD stability and dynamics”, 1992  
Co-organizer, Research Lectures, Par City Program on Nonlinear Waves, 1995  
Co-organizer, Mini-symposium of Mathematical Fluid Dynamics, IMACS, Berlin, 1997  
Co-organizer, Session on Fluid Dynamics, AMS-SAMS International Meeting, 1997  
Co-organizer, Session on Fluid Dynamics, AMS-AuMS International Meeting, 1999  
Co-organizer Session on Jean Leray, AMS Austin Meeting, 1999  
Co-organizer, Session on Mathematical Fluids, AMS-SMF International Meeting, 2001  
Co-organizer, Session on Fluid Dynamics, AMS-RSME International Meeting, 2003  
Co-organizer, Session on PDE and applications, AMS-India International Meeting, 2003  
Co-organizer, Session of Spectral Theory, AMS Northwestern Meeting, 2004  
Co-organizer, Analytical and Stochastic Fluid Dynamics, MSRI 2005  
Co-organizer, Session on PDE of evolution type, AMS-Polish International Meeting, 2007  
Co-organizer, Fluids Thematic Year, TIFR Bangalore, 2007  
Co-organizer, Session of the Euler equations, AMS DePaul Meeting, 2007  
Co-organizer, Session on Mathematical Fluids, AMS-Brazil International Meeting, 2008  
Co-organizer, Southern California Workshop on the Mathematics of Fluids, 2008  
Co-organizer, Conference for 85th Birthday of Cathleen Morawetz, Fields Institute, 2008  
Co-organizer, Conference on Analysis of Fluid Stability, Maxwell Institute, Edinburgh, 2009  
Co-organizer, Session on PDE and Harmonic Analysis, Baylor University, 2009  
Co-organizer, Southern California Symposium on Fluids, Caltech, 2010  
Co-organizer, Session on Nonlinear PDE and Applications, UCLA, 2010  
Co-organizer, Workshop on Mathematical Fluids, Oberwolfach, 2012  
Co-organizer, Workshop on Climate Change, Natural Hazards and Risks, Mexico, 2013  
Co-organizer, Workshop on Mathematical Fluid Dynamics, Oberwolfach, Germany, 2015  
Co-organizer, Southern California SIAM Symposium Claremont Colleges, 2016  
Co-organizer, Workshop on Probabilistic Perspectives in Nonlinear PDEs. ICMS, Edinburgh, 2017

### *Mentoring Activities*

Organizer: “Celebration of Women in Mathematics” Conference, M.I.T., 1994  
Mentoring program for women graduate students, Institute for Advanced Study Program, 1995  
Panel discussion, Berkeley / Mills College College summer program for women, 1995

Panel discussion, “Launching a career in mathematics”, Association for Women in Mathematics  
 Workshop, Winter Meeting, AMS, 1996  
 AWM representative to the Joint Committee on Women, 2003-05  
 Co-principal speaker, Nebraska Conference for Women, 2005  
 Co-organizer, Celebration of Ladyzhenskaya and Oleinik, MSRI, 2006  
 Co-organizer, 85th Birthday Fest for Cathleen Morawetz, Fields Institute 2008

**Selected Invited Lectures:**

*seminars- international universities*

1994 University of Stockholm  
 1996 University of Exeter  
 1996 University of Bayreuth  
 1996 Academy of Sciences, Beijing  
 1996 University of Heidelberg  
 1996 University of Stuttgart  
 1997 University of Heidelberg  
 1997 I.C.T.P. Trieste  
 1997 U. of Witswatersand, Johannesburg  
 1997 Analysis Nonlinear, UNAM, Mexico City  
 1998 College de France Seminar of J.-L. Lions  
 1998 Institut Henri Poincare, Paris  
 1998 Ecole Normal Superieure, Paris  
 1998 University of Paris VI  
 1998 Max Planck Institut, Bonn  
 1998 University of Utrecht, Netherlands  
 1998 University of Paris- Orsay  
 1998 Lab. Dynamic Meteorology, ENS, Paris  
 1998 Observatoire de France, Toulouse  
 1999 University of Sidney, Sidney  
 2001 University of Gottingen, Graduate Colloquium  
 2001 University of Heidelberg, Heidelberg  
 2001 University of Stuttgart, Stuttgart  
 2001 Institut Henri Poincare, Paris  
 2002 Ecole Normal Supereirure, Lyon  
 2003 ETH, Zurich  
 2003 TIFR, Bangalore  
 2004 University of Zurich  
 2004 University of Paris - 7  
 2004 ENS- Lyon  
 2004 University of Paris-Nord  
 2004 ENS- Paris  
 2004 University of Edinburgh  
 2004 University of Paris-Orsay  
 2006 University of Lund  
 2006 R.I.M.S., University of Kyoto  
 2006 Graduate Center, University of Tokyo  
 2007 University of Toronto/Fields Institute  
 2007 University of Paris-Nord  
 2008 East China Normal University, Shanghai

2009 University of Cambridge  
 2009 University of Nottingham  
 2009 ENS - Paris  
 2011 Oxford University  
 2011 University of Campinas, Brazil  
 2011 Federal University, Rio de Janeiro, Brazil  
 2012 University of Sydney  
 2012 Australian National University  
 2012 Melbourne University  
 2013 Prague University  
 2015 University of Palermo  
 2017 London/Paris University Joint Analysis Seminar

*seminars - American universities*

1994 Brown University, Analysis Seminar  
 1994 University of Virginia, Joint Pure- Applied Colloquium  
 1994 Brown University, Fluid Mechanics Seminar  
 1994 Yale University, Analysis Seminar  
 1994 Brown University, Applied Math Colloquium  
 1994 U.S.C., Center for Applied Math Sciences  
 1994 University of Houston, Nonlinear Analysis Seminar  
 1994 University of Illinois, Urbana, Theoretical Mechanics Colloquium  
 1994 University of Arizona, Applied Math Seminar  
 1995 University of California, Berkeley, Colloquium  
 1996 Brown University, P.D.E. Seminar  
 1996 Notre Dame University, Colloquium  
 1996 University of Missouri, Colloquium  
 1996 Northwestern University, PDE Seminar  
 1996 University of Illinois, Urbana, Math in Science Series  
 1997 University of Texas, Austin Applied Math Seminar  
 1997 University of Chicago, Applied Math Seminar  
 1997 Kansas State University, Colloquium  
 1998 University of Michigan, P.D.E. Seminar  
 1998 Northwestern University, Nonlinear Science Seminar  
 1999 Ohio State University, Applied Math Seminar  
 1999 University of California at Irvine, P.D.E. Seminar  
 1999 Purdue University, Colloquium  
 1999 Princeton University, Fluid Dynamics Seminar  
 1999 Institute for Advanced Study, Turbulence Seminar  
 1999 Courant Institute, MHD Seminar  
 1999 Princeton University, Applied Math Colloquium  
 1999 Brown University, Applied Math Colloquium  
 1999 University of Pittsburgh, Math Colloquium  
 1999 U.C. Irvine, PDE Seminar  
 1999 Notre Dame University, Colloquium  
 2000 University of Wisconsin, PDE Seminar  
 2000 Brown University, PDE Seminar  
 2000 University of Missouri, "Show me" Lecture  
 2000 Washington University, Colloquium  
 2000 University of Missouri, Colloquium

2000 University of Missouri, PDE Seminar  
2000 University of Indiana, PDE Seminar  
2000 University of Indiana, Colloquium  
2001 University of Chicago, Colloquium  
2001 University of Utah, Applied Math Seminar  
2002 University of Texas at Austin, Applied Math Seminar  
2002 North Carolina State, Colloquium  
2002 USC, Colloquium  
2002 IIT, Colloquium  
2002 University of Michigan, PDE Seminar  
2003 Princeton University, Analysis Seminar  
2004 Notre Dame, Applied Math Seminar  
2004 Concordia University, Analysis Seminar  
2004 USC, Colloquium  
2005 IAS, Members Seminar  
2005 Rutgers, Colloquium  
2005 Princeton, Joint Princeton-IAS-Rutgers Analysis Seminar  
2005 Courant, NYU, Analysis Seminar  
2005 Princeton University, Noetherian Ring  
2005 Penn State University, Colloquium  
2005 Yale, Analysis Seminar  
2006 U.C. Irvine, Colloquium  
2006 Indiana University, Colloquium  
2006 University of Southern California, Colloquium  
2007 Northwestern, PDE Seminar  
2007 UCLA, Applied Colloquium  
2008 U.C. Irvine, Colloquium  
2008 U.C. Santa Barbara, Colloquium  
2008 Cal Poly, San Luis Obsipo, Colloquium  
2008 California Institute of Technology, Applied Colloquium  
2008 University of Texas, Austin, Analysis Seminar  
2009 Arizona State University, Colloquium  
2009 University of Texas, Austin, Distinguished Women in Math Lecture.  
2010 U.C. Riverside, Colloquium  
2010 UIC, Applied Math Seminar  
2011 Ohio State, PDE seminar  
2011 U.C. Irvine, Colloquium  
2011 Penn State University, Applied Math Seminar  
2012 U.C. Santa Cruz, Colloquium  
2012 Claremont Center for Math Sciences, Colloquium  
2012 University of Memphis, Colloquium  
2012 University of Pittsburgh, PDE Seminar  
2012 Pomona College, Colloquium  
2012 U.C. Santa Cruz, Colloquium  
2013 Tulane University, Colloquium  
2013 University of Illinois, PDE Seminar  
2013 Princeton University, Math Fluids Seminar  
2013 Courant Institute, NYU, Analysis Seminar  
2014 University of Texas, Austin, Colloquium

- 2015 Oregon State, Analysis Seminar
- 2015 UCLA, Analysis Seminar
- 2015 Oregon State, Colloquium
- 2015 University of Houston, Colloquium
- 2017 Brigham Young University, Laurent Schwarz Lecture
- 2017 Vanderbilt University, Shanks Fluid Dynamics Lecture

*invited conference lectures*

- 1992 Dynamo Theory Workshop, Newton Institute, Cambridge
- 1994 Special Session, AMS meeting at Manhattan
- 1994 Waves in the Ocean Workshop, M.S.R.I.
- 1995 Course of four lectures on non-linear waves at IAS, Princeton
- 1996 International Conference on Hyperbolic P.D.E., Hong Kong
- 1996 Special Session, A.M.S. meeting at Columbia, Missouri
- 1996 Oberwolfach meeting on Mathematical Fluid Dynamics
- 1997 Special Session, Joint A.M.S. - S.A.M.S. meeting
- 1997 Oberwolfach meeting on Fluid Stability
- 1997 IMACS mini-symposium, Berlin
- 1998 A.M.S. Special Session, Temple University
- 1999 Conference on M.H.D. Instabilities, I.H.P. Paris
- 1999 Dynamical Systems Workshop, IAS, Princeton
- 1999 Fluids Mimi-symposium, SIAM annual meeting, Atlanta
- 1999 Fluids Special Session, Joint AMS-AuMS meeting in Australia
- 1999 Fluids Special Session, AMS meeting in Austin
- 2000 Conference in honour of Roger Temam, Paris
- 2000 French-Czech Conference on Fluid Dynamics, CIRM, France
- 2000 Conference in honor of John Heywood, Naples
- 2000 Newton Institute Workshop on Topological Fluids, Cambridge
- 2001 Contemporary Challenges in Fluid Mechanics Conference, Italy
- 2001 Dynamics and Geophysics Workshop, IMA
- 2001 Applied PDE Special Session, AMS meeting in Irvine
- 2001 CNRS Workshop on Shear Flow and Turbulence, Paris
- 2003 Directions in Applied Math, U. of Illinois-Urbana
- 2003 Workshop on Wavelets, Banff Center, Canada
- 2003 Conference on PDE and Fluid Dynamics, Northwestern University
- 2003 Mathematical Fluids Session, AMS-Spain Meeting
- 2003 PDE and Applications Session, AMS-India Meeting
- 2004 Fluids Workshop, ENS-Cachan, Paris
- 2004 SIAM minisymposium Houston
- 2004 Annual Nebraska Conference for Women in Mathematics
- 2005 Mathematics Fluid Dynamics Workshop, AIM
- 2005 Stability and Control Workshop, Oberwolfach
- 2005 Conference on PDE, Poznan, Poland
- 2006 Geophysical Fluids Workshop, A.I.M.
- 2006 Chicago PDE Days, Northwestern University
- 2006 Conference for 70th Birthday of Ya. Sinai, U. of Maryland
- 2006 Conference on Mathematical Fluid Dynamics, Steklov Institute, Moscow
- 2006 Conference in honor of Ladyzhenskaya and Oleinik, MSRI
- 2006 Mathematical Fluid Dynamics Workshop, Bernoulli Institute, Lausanne



2007 Conference in honor of Paulo Galdi, Lisbon  
 2007 300th Euler Centenary, Euler Institute, St. Petersburg  
 2007 Nonlinear Conservation Laws Session, AMS DePaul Meeting  
 2007 PDEs of Evolution Type Session, AMS Warsaw Meeting  
 2008 Geophysical Fluid Dynamics Session, AMS-Indiana Meeting  
 2008 Conference for 85th Birthday of Cathleen Morawetz, Fields Institute  
 2008 Conference for 70th Birthday of George Sell, York University  
 2008 Session on Nonlinear PDE, joint AMS-Shanghai Meeting, China  
 2009 Southern California Meeting on Fluid Dynamics, UCSB  
 2009 PIMS conference on Regularity Problems in Hydrodynamics, Vancouver, Canada  
 2009 Maxwell Institute Conference on Fluid Stability, Edinburgh, Scotland  
 2009 AIM Workshop on the Euler and SQG equations, Palo Alto  
 2009 Deterministic and Stochastic PDE Session, AMS-Baylor Meeting  
 2010 Conference on PDE of Fluids, University of Warwick  
 2010 Interdisciplinary PDE Session, AMS-Notre Dame Meeting  
 2011 Southern California Fluids Conference, U.C. Riverside  
 2011 SIAM PDE Conference, San Diego  
 2011 Conference in honor of Peter Constantin, Carnegie-Mellon University  
 2012 CRM Workshop on geometry and dynamics of fluids, Montreal  
 2012 IAS Workshop on symplectic dynamics and fluid dynamics, Princeton  
 2012 Advances in mathematical analysis of PDEs, Mittag-Leffler Institute, Stockholm  
 2012 Workshop on topological fluid mechanics, Isaac Newton Institute, Cambridge  
 2012 Mathematical aspects of hydrodynamics, Oberwolfach, Germany  
 2012 Midwest PDE Conference, Memphis  
 2013 AIM Workshop, Stochastic Fluid Dynamics, Palo Alto  
 2013 Analysis of dynamics of fluids, AMS-Colorado Meeting  
 2013 Mathematical Fluids Session, Guanajuato, Mexico  
 2013 Mathematical Fluids Workshop, Stanford  
 2013 Red Raider Symposium, Texas Tech  
 2014 Topics in PDE session, Joint Meetings, Baltimore  
 2014 Mathematical Fluids, AIMS Conference, Madrid  
 2014 Nonlinear PDE session, AMS Meeting, San Francisco  
 2015 AWM Research Symposium, University of Maryland  
 2015 Mathematical Fluids, AMS Meeting, Las Vegas  
 2015 Deterministic and Stochastic Fluids, SIAM Meeting, Arizona  
 2016 PDEs of Fluids, JMM Meeting, Seattle  
 2016 Advances in Hydrodynamics, BIRS, Banff  
 2016 Mixing and Nonlinear Stability, AIM Workshop  
 2016 Nonlinear and Stochastic PDEs, AMS Meeting, Denver  
 2017 Turbulent Dissipation, Mixing and Predictability, IPAM Workshop  
 2017 Regularity, Instabilities and Turbulence, ICERM Workshop  
 2017 Deterministic and Stochastic PDE Session MCA2017, Montreal

**Major departmental committees:**

UIC:

1975-	Applied Mathematics Committee
1978-82, 84-89	Advisory Committee
1983-85, 88-89	Colloquium Chairman
1984-89, 94-97, 00-03	Faculty Appointments Committee
	Chair, 1995-96, 1999-00, 2005-06

## USC:

07-08	Faculty Appointments Committee
08-12	College Promotion and Tenure Committee
08-09	Department Merit Committee
09-11	Faculty Appointments Committee
11-12	Department Merit Committee
11-17	Faculty Search Committee
2014	Review Committee, USC Computer Science Department

## **Ph.D Students Supervised:**

Natasa Pavlovic	Ph.D 2002, UIC
Yevegeny Goncharov	Ph.D 2003, UIC
Natalya Popova	Ph.D 2005, UIC
David St John	Ph.D 2009, UIC

## **Thesis Committees:**

Nathan Glatt-Holtz	Ph.D 2008, USC
George Chamoun	Ph.D 2009, USC
Vlad Vicol	Ph.D 2009, USC
Michaela Ignatova	Ph.D 2010, USC
Fangxu Jing	Ph.D 2011, USC
Vitali Ostrovsky	Ph.D 2013, USC
Gregory Sokolov	Ph.D 2014, USC
Giusy Mazzone	PhD 2015, U. Pitt
Yangyang Huang	PhD 2016, USC

## **Postdoctoral Fellows Mentored:**

Andrei Lyashenko, UIC  
Roman Shvydkoy, UIC  
Alexey Cheskidov, UIC  
Alexsey Polunchenko, USC  
Walter Rusin, USC  
Anthony Suen, USC  
Christian Zillinger, USC  
Gerrit Welper, USC

## **Publications**

1. Spin-down in a rotating stratified fluid, Part I, *Stud. Appl. Math.* LIII, 111-136 (1974).
2. Interaction of vortices on the surface of a rotating sphere, *Tellus* 27, 15-24 (1975).
3. Quasi-steady flows of a rotating stratified fluid in a sphere, *J. Fluid Mech.*, 76, 209-228 (1976).
4. Limits to tidal control on lunar asymmetry, (with J.V. Smith), *Lunar Science VIII*, 322-324 (1977).
5. Hydrostatic tidal model for lunar asymmetry, *Geophysical and Astrophysical Fluid Dynamics*, 15, 105-122 (1980).

6. *An Introduction to the Mathematical Theory of Geophysical Fluid Dynamics*, Mathematics Studies 41, North-Holland, 282pp (1980).
7. Internal waves in the ocean stratified with variable buoyancy frequency, (with W.L. Siegmann), *An. Acad. Brasil Cienc.* *53*, 213-221 (1981).
8. Internal waves in a contained rotating stratified fluid, (with W.L. Siegmann), *J. Fluid Mech.*, *114*, 123-156 (1982).
9. Internal waves in a rotating stratified fluid in an arbitrary gravitational field, (with W. Siegmann), *Geophys. and Astrophys. Fluid Dynamics*, *19*, 267-292 (1982).
10. Turning surface behavior for internal waves subject to general gravitational fields, *Geophys. and Astrophys. Fluid Dynamics*, *22*, 189-200 (1982).
11. Effects of dissipation on internal waves in a contained rotating stratified fluid, (with W.L. Siegmann), *Geophys. and Astrophys. Fluid Dynamics*, *27*, 183-216 (1983).
12. Ordinary differential equations and internal waves, *Differential and Integral Equations*, Proc. 13th Midwest Conf., 36-54 (1985).
13. Internal oscillations in the Earth's fluid core, *Geophys. J. of the Roy. Astr. Soc.*, *80*, 345-361 (1985).
14. Stability of the subseismic wave equation for the Earth's fluid core, *Geophys. and Astrophys. Fluid Dynamics*, *31*, 151-167 (1985).
15. Internal oscillations in a rotating stratified spherical shell: asymptotic solutions. *Geophys. J. of the Roy. Astr.*, *89*, 637-657 (1987).
16. Hydromagnetic waves in the Earth's fluid core, *Geophys. and Astrophys. Fluid Dynamics*, *39*, 315-333 (1987).
17. Hydromagnetic waves in the Earth's fluid core. Proceedings of the symposium U 2, 19th General Assembly of I.U.G.G., U2-28, 1510 (1987).
18. Stability and waves in the Earth's fluid core, *Proc. Energy Stability and Convection*, Pitman Research Notes in Mathematics 168, 325-345 (1988).
19. Asymptotic behaviour of decay rates of internal waves in a rotating stratified spherical shell, *Geophys. J. Roy. Astr. Soc.*, *96*, 245-252 (1989).
20. Conditions for hydromagnetic instabilities in a contained rotating stratified fluid. *Geophys. and Astrophys. Fluid Dynamics*, *46*, 245-260 (1989).
21. Viscous decay of core oscillations. Proceedings of the S.E.D.I. Symposium, *Terra Cognita* (1989).
22. Hydromagnetic waves in a differentially rotating stratified spherical shell, *Geophys. and Astrophys. Fluid Dynamics*, *48*, 53-67 (1989).
23. Nonlinear stability for stratified magnetohydrodynamics, (with M.M. Vishik), *Geophys. and Astrophys. Fluid Dynamics*, *55*, 19-45 (1990).
24. Lax pair formulation for the Euler equation, (with M.M. Vishik), *Physics Letters A*, *148* no. 6, 7 313-319 (1990).

25. Instability criteria for the flow of an inviscid incompressible fluid, (with M.M. Vishik), *Phys. Rev. Lett.*, *66* no. 17, 2204-2206 (1991).
26. Dynamo theory, vorticity generation and exponential stretching, (with M.M. Vishik), *Chaos*, vol. 1, no. 2, 198-205 (1991).
27. Instability criteria in fluid dynamics, (with M.M. Vishik), *Topological Methods in Fluid Dynamics*, ed. H.K. Moffatt, NATO AS1 *218*, 535-549 (1992).
28. Instability criteria for steady flows of a perfect fluid, (with M.M. Vishik), *Chaos*, vol. 2, no. 3, 455-460 (1992).
29. An inverse scattering treatment for the flow of an ideal fluid in two dimensions, (with M.M. Vishik), *Nonlinearity*, *6*, 231-249 (1993).
30. Dynamo theory methods for hydrodynamical stability, (with M.M. Vishik), *J. Math Pure et Appliques*, *72*, 145-180 (1993).
31. Hydrodynamic instability for certain ABC flows (with A.D. Gilbert and M.M. Vishik), *Geophys Astrophys. Fluid Dyn.*, *73*, 97-107 (1993).
32. On stability and instability criteria for magnetohydrodynamics, (with M.M. Vishik), *Chaos*, vol. 5, no. 2, 416-423 (1995).
33. Nonlinear instability in hydrodynamics of an ideal fluid (with W. Strauss and M.M. Vishik), *Annales I.H.P, J. Nonlineaire*, *14*, 2, 187-209 (1997).
34. Instability in parallel flow revisited (with L.N. Howard), *Studies in Applied Math.*, *101*, no. 1, 1-21 (1998).
35. Asymptotic methods for magnetohydrodynamic stability, (with M.M. Vishik), *Quarterly Applied Math.*, *56* no. 2, 377-398 (1998).
36. Lectures on Stability and Instability of an Ideal Fluid. IAS/Park City Lecture Series, ed. L. Caffarelli & Weinan E., vol. 5, 227-299 (1998).
37. Nonlinear instability of a precessing body with a cavity filled by an ideal fluid (with A.A. Lyashenko), *SIAM J. Math. Analysis*, *29*, no. 2, 600-618 (1998).
38. A sufficient condition for instability in the limit of vanishing dissipation (with A. Lyashenko). *J. math Analysis & Applications*, *221* 544-558 (1998).
39. The unstable spectrum of oscillating shear flows (with L. Belenkaya and V. Yudovich), *SIAM J. Applied Math*, *59*, no. 5 1701-1715 (1999).
40. Robustness of instability for the 2-D Euler equations (with W. Strauss and M.M. Vishik), *SIAM J. Math Analysis*, *30*, no. 6, 1343-1355 (1999).
41. Instabilities in fluid motion (with V. Yudovich), *Notices of AMS* *46* no. 11, 1358-1367 (1999).
42. Unstable eigenvalues associated with inviscid fluid flows (with M. Vishik and V. Yudovich), *J. Math Fluid Mech.*, *2*, no. 4, 365-380 (2000).
43. On nonlinear instability and stability for stratified shear flow, *J. Math Fluid Mech.*, *3*, no. 1, 82-97 (2001).

44. Instability of steady flows of an ideal incompressible fluid (with A. Shnirelman). "Mathematical Fluid Mechanics - Recent Results and Open Questions", Editors Neustupa and Penel, *Advances in Mathematical Fluid Mechanics*, Birkhauser, 143-172 (2001).
45. On vortex tube stretching and instabilities in an inviscid fluid, *J Math Fluid Mech.*, 4 no. 1, 30-44 (2002).
46. On the unstable spectrum of the Euler equation. *Nonlinear PDE and Applications*, Seminaire du College de France vol. 14, *Stud. Math. Appl.*, 31, 351-365, North-Holland (2002).
47. Localized instabilities in fluids (with A. Lipton-Lifchitz). *Handbook on Mathematical Fluid Dynamics*, vol. 2, 289-354, North-Holland (2003).
48. Navier: blow up and collapse (with M. Cannone), *Notices A.M.S.* 50, no. 1, 7-13 (2003).
49. Nonlinear instability in two dimensional ideal fluids: the case of a dominant eigenvalue (with M. Vishik). *Comm. Math Physics*, 243, 261-273 (2003).
50. Remarks concerning a modified Navier Stokes equation (with N. Pavlovic). *Discrete and Continuous Dyn. Sys* 10, no. 1-2, 269-288 (2004).
51. Blow up in a 3 dimensional vector model for the Euler equations (with N. Pavlovic), *Comm. Pure App. Math*, vol. LVII, 705-725 (2004).
52. On recent development in the spectral problem for the linearized Euler equation (with R. Shvydkoy), *AMS Contemporary Math*, vol. 371, 271-297 (2005).
53. The unstable spectrum of the surface quasi-geostrophic equation (with R. Shvydkoy), *J. Math Fluid Mech.*, 7, 81-93 (2005).
54. The stability of flows, *Encyclopedia of Mathematical Physics*, Edited by Francoise, Naber and Tsou, Elsevier (2006).
55. Dyadic models for the equations of fluid motion (with N. Pavlovic), *Proceedings of the MSRI Workshop: the legacy of Ladyzhenskaya and Oleinik* (2006).
56. Nonlinear instability for the Navier-Stokes equations (with N. Pavlovic and R. Shvydkoy), *Comm. Math. Physics*, 264, 335-347 (2006).
57. An inviscid dyadic model of turbulence: stability of the fixed point and Onsager's Conjecture (with A. Cheskidov and N. Pavlovic), *Journal Math Physics*, vol. 48, no. 6 (2007).
58. The unstable spectrum of the Navier-Stokes operator in the limit of vanishing viscosity (with R. Shvydkoy). *Annales I.H.P., J. Nonlineaire*, 25, 713-724 (2008).
59. Energy conservation and Onsager's Conjecture for the Euler equations (with A. Cheskidov, P. Constantin, and R. Shvydkoy). *Nonlinearity*, 21 no. 6, 1233-1252 (2008).
60. The vanishing viscosity limit for a dyadic model (with A. Cheskidov) *Physica D*, 238, no 8, 783-787 (2009).
61. Nonlinear instability for the critically dissipative quasi-geostrophic equation (with N. Pavlovic and V. Vicol). *Comm. Math. Physics*, 292, no 3, 797-810, (2009).

62. On the energy equality for weak solutions to the 3D Navier-Stokes equations (with A. Cheskidov and R. Shvydkoy). *Advances in Mathematical Fluid Mechanics*, 171-175, Springer (2010).
63. An inviscid dyadic model of turbulence: the global attractor (with A. Cheskidov and N Pavlovic). *Discrete and Continuous Dyn. Sys. A*, vol. 26, no. 3, 781-794, (2010).
64. Global well-posedness for an advection-diffusion equation arising in magnetogeostrophic dynamics (with V. Vicol). *Annales I.H.P., J. Nonlineaire*, 28, 283-301 (2011).
65. On the ill/well-posedness and nonlinear instability of the magneto-geostrophic equations (with V. Vicol). *Nonlinearity*, 24, 3019-3042 (2011).
66. Higher regularity of Holder continuous solutions of parabolic equations with singular drift velocities (with V. Vicol). *J. Math Fluid Mech.*, 14, 2, 255-266 (2012).
67. On a singular incompressible porous media equation (with F. Gancedo, W. Sun and V. Vicol). *Journal Math Physics*, 53, no. 11, 1-20 (2012).
68. A continuous model for turbulent energy cascade (with A. Cheskidov and R. Shvydkoy). *LMS Lecture Series*, no. 402, 52-70 Cambridge University Press (2012).
69. On the supercritically diffusive magneto-geostrophic equations (with W. Rusin and V. Vicol), *Nonlinearity*, 25, 3071-3097 (2012).
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71. The magnetogeostrophic equations: a survey (with W. Rusin and V. Vicol). *AMS Translations Series*, vol. 232, 53-78 (2014).
72. Holder continuity of solutions to the kinematic dynamo equations (with A. Suen). *J. Math Fluid Mech.*, vol. 16, no. 4, 691-700 (2014).
73. On the smoothing effect in the kinematic dynamo equations in critical spaces (with W. Rusin). *J. Math Fluid Mech.*, vol. 17, no. 1, 145-153 (2015).
74. Existence, uniqueness, regularity and instability results for the viscous magneto-geostrophic equations (with A. Suen). *Nonlinearity*, 28, 3193-3217 (2015).
75. Inviscid limits for a stochastically forced shell model of turbulent flow (with N. Glatt-Holtz and V. Vicol). *Annales I.H.P., Probabilities et Statistiques* vol. 52, no. 3, 1217-1247 (2016).
76. Asymptotic analysis for randomly forced MHD (with J. Foldes, N. Glatt-Holtz and G. Richards). To appear, *SIAM J. Math Analysis* (2017).

*Book Reviews:*

Review of *Rheometry* by K. Walters, *S.I.A.M. Review*, 20, 197-198 (1978).

Review of *Free Oscillations of the Earth* by E.R. Lapwood and T. Usami, *S.I.A.M. Review*, 24, no. 4, 496-497 (1982).

Review of *Imaging the Earth's Interior* by J.F. Claerbout, *S.I.A.M. Review* 28, no. 2, 256-257 (1986).

Review of *Lectures on Geophysical Fluid Dynamics* by R. Salmon, SIAM Review 41-2 387-389 (1999).

Review of “The Navier Stokes Equations: An Elementary Functional Analytic Approach” by H. Sohr, J. Fluid Mech (2003).

*Interdisciplinary Publications:*

The mathematical miller of Nottingham, (with A. Powell), The Mathematical Intelligencer, 11, no. 4, 38-40 (1989).

A celebration of women in mathematics, AMS Notices vol. 42, no. 1, 32-42 (1995).

Memorial for Olga Ladyzhenskaya, AMS Notices vol. 51, no. 11, 1320-1331 (2004).

Olga Ladyzhenskaya and Olga Oleinik (with B. Keyfitz), Gac. R. Soc. Mat. Esp, 7 no. 3, 621-628 (2004).

The IAS School of Mathematics at 75 (with M. Goresky), AMS Notices vol. 52, no. 8, 859-862 (2005).

Isaac Newton and Roger Cotes, AMS Bulletin, vol. 44, no. 2, 255-257 (2007).

300th Anniversary of Leonhard Euler’s Birth, AMS Bulletin, 44, no. 4 513-514 (2007).

Mathematical Congress of the Americas, AMS Notices vol 59 no 5, 613 (2012).

Making waves in fluid dynamics (with R. Shvydkoy and V. Vicol), International Inovation, November issue, (2012).

The Milnor Issue, Introductory Comments, AMS Bulletin, 52 no. 4, 543-544 (2015).

*Edited Volumes:*

Internal Waves in Geophysical Contexts, (with K. Hutter), Geophysical and Astrophysical Fluid Dynamics, 48 (1-3) (1989).

M.H.D. Stability and Dynamos, (with M.M. Vishik), Geophysical and Astrophysical Fluid Dynamics, 73 (1993).

Handbook of Mathematical Fluid Dynamics, vol. 1 (edited with D. Serre), Elsevier, xii + 816 pp (2002).

Handbook of Mathematical Fluid Dynamics, vol. 2 (edited with D. Serre), Elsevier, xii + 614 pp (2003).

Handbook of Mathematical Fluid Dynamics, vol. 3 (edited with D. Serre), Elsevier, xi + 667 pp (2004).

Handbook of Mathematical Fluid Dynamics, vol. 4 (edited with D. Serre), Elsevier, xi + 711 pp (2007).