XIAOMING WANG

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Florida State University
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EDUCATION

Ph.D. in Mathematics, Indiana University – Bloomington, Sept. 1991–July 1996.

- Major: Applied Mathematics

PROFESSIONAL EXPERIENCES

Aug. 2006 – present: Professor of Mathematics, Florida State University.

Jan. 2010 – May 2010: Visiting member, The Institute for Mathematics and Its Applications, University of Minnesota.

Dec. 2003 – Aug. 2006: Tenured Associate Professor of Mathematics, Florida State University.

July 2001 – May 2005: Tenured Associate Professor of Mathematics, Iowa State University.

Sept. 2002 – Dec. 2002: Member, Institute for Advanced Study, Princeton, New Jersey.

Jan. 2002 – May 2002: Research Scientist, Courant Institute, New York University.

Sept. 2001 – Dec. 2001: Visiting Associate Professor, Courant Institute, New York University.

Aug. 1996 – June 2001: Assistant Professor of Mathematics, Iowa State University.

Sept. 1997 – Aug. 1998: Courant Instructor, Courant Institute of Mathematical Sciences, New York University.

Sept. 1996 – Aug. 1997: Postdoctoral Fellow, Courant Institute of Mathematical Sciences, New York University.

COURTESY APPOINTMENTS

June 2006 – present: Guest Professor, Fudan University, Shanghai, China.

Sept. 2009 – present: Affiliated Faculty Member, Department of Scientific Computing, Florida State University.

June 2004 – present: Faculty Associate of Geophysical Fluid Dynamics Institute, Florida State University.

March 2011 – present: Affiliated Member, Florida Climate Institute.

TEACHING

Courses developed:

- Applied Analysis
- Mathematical Theory for Incompressible Flows
- Elementary Statistical Theory with Applications to Fluid Systems
- Advanced Partial Differential Equations

Courses Taught:

- Pre-calculus Algebra and Trigonometry
- Calculus, I, II, III.
- Ordinary Differential Equations
- Elementary Differential Equations
- Elementary Partial Differential Equations, I, II (undergraduate)
- Complex Variables
- Introduction to Analysis, I, II
- Introduction to Dynamical Systems
- Elementary PDEs (graduate level), I, II
- Methods of Applied Mathematics
- Applied Analysis, I, II
- Mathematical Theory for Incompressible Flows
- Elementary Statistical Theory with Applications to Fluid Systems
- Advanced Partial Differential Equations

Graduate Students

- Doctoral students supervised:
  - Yuki Saka (Ph.D. 2007, currently working in industry)
  - Rana Parshad (Ph.D. 2009, currently a tenure-track Assistant Professor at Clarkson University)
  - Fei (Neil) Hua (Ph.D. 2009, currently a Vice President at Nomura bank. First job a postdoctoral fellow at Courant Institute.)
  - Tianyu (Chris) Liang (Ph.D. 2012, currently working for ING in Pheladelphia)
  - Dong Sun (Ph.D. 2015, currently a Senior Structuring Analyst at Exelon Generation LLC (Constellation) in Baltimore.)
  - Anthony Wills (Ph.D. 2015, currently a Quant at Southern Company in Atlanta)
  - Daozhi Han (Ph.D. 2015, currently a Zorn Fellow at Indiana University, will start a tenure-track job at Missouri University of Science and Technology in July 2017.)
  - Celestine Woodruff (Ph.D. 2015, currently a tenure-track Assistant Professor at James Madison University)
- Served on numerous doctoral student supervisory committees and honors thesis committees.

Mentored two postdoctoral fellows.

Hosted fifteen long-term (at least one month) visitors.

PUBLICATIONS[1]

ARTICLES IN REFEREED JOURNALS

83. *Convergence Analysis and Error Estimates for a Second Order Accurate Finite Element Method for the Cahn-Hilliard-Navier-Stokes System*, Amanda Diegel, Cheng Wang, Xiaoming Wang, and Steven Wise, NUMER. MATH., accepted March 2017. DOI 10.1007/s00211-017-0887-5
82. *Uniquely solvable and energy stable decoupled numerical schemes for the Cahn-Hilliard-Stokes-Darcy system for two-phase flows in karstic geometry*, Wenbin Chen, Daozhi Han, and Xiaoming Wang, NUMER. MATH., Sept. 2017, Vol. 137, no.1, pp 229–255 . DOI :10.1007/s00211-017-0870-1.
81. *Initial boundary layer associated with the nonlinear Darcy-Brinkman-Oberbeck-Boussinesq system*, Mingwen Fei, Daozhi Han, and Xiaoming Wang. PHYSICA D, published online Aug. 2016. DOI:10.1016/j.physd.2016.08.002
80. *Decoupled energy-law preserving numerical schemes for the Cahn-Hilliard-Darcy system,* Daozhi Han and Xiaoming Wang. NUMER METHODS PARTIAL DIFFER EQU, vol. 32, no.3, May 2016, pp. 936–954.
79. *Numerical algorithms for stationary statistical properties of dissipative dynamical systems*, an invited paper dedicated to Prof. Peter Lax on the occasion of his 90th birthday, DISCRETE CONTINUOUS DYN SYST SER A, vol. 36 no.8, pp. 4599-4618, August 2016.
78. *An efficient and long-time accurate third-order algorithm for the Stokes-Darcy system*, Wenbin Chen, Max Gunzburger, Dong Sun, and Xiaoming Wang, NUMER. MATH., (2016) 134(4), 857-879, DOI: 10.1007/s00211-015-0789-3.
77. *A second order in time, uniquely solvable, unconditionally stable numerical scheme for Cahn-Hilliard-Navier-Stokes equation*, Daozhi Han and Xiaoming Wang, J. COMP. PHYS., (2015), pp. 139-156.
76. *Long-time dynamics of 2D double-diffusive convection: analysis and/or numerics*, Florentina Tone, Xiaoming Wang, and Djoko Wirosoetisno. NUMER. MATH., July 2015, vol. 130, no.3, pp. 541-566,
75. *Existence and uniqueness of global weak solutions to a Cahn-Hilliard-Stokes-Darcy system for two phase incompressible flows in karstic geometry*, Daozhi Han, Xiaoming Wang, and Hao Wu, JOUR. DIFF. EQN., vol.257, no. 10, Nov. 2014, pp.3887-3933.
74. *Parallel non-iterative multi-physics domain decomposition methods for the time-dependent Stokes-Darcy model*, Yanzhao Cao, Max Gunzburger, Xiaoming He and Xiaoming Wang, MATH. COMP., Volume 83, number 288, July 2014, pages 1617-1644.

[1]The authors are listed in alphabetic order on all my papers except for a few engineering ones in accordance with convention.

73. *Two phase flows in karstic geometry*, Daozhi Han, Dong Sun and Xiaoming Wang, Mathematical Methods in the Applied Sciences, Vol. 37, no.18, pages 3048-3063, Nov. 2014.
72. *Initial Boundary Layer Associated with the Nonlinear Darcy-Brinkman System*, Daozhi Han and Xiaoming Wang, Jour. Diff. Eqn., Volume 256, Issue 2, 15 January 2014, Pages 609-639,
71. *A linear iteration algorithm for a second-order energy stable scheme for a thin film model without slope selection*, Wenbin Chen, Cheng Wang, Xiaoming Wang and Steven Wise, J. Sci. Comp., vol. 59 (3), 2014, 574-601,
70. *Efficient and long-time accurate second order schemes for the Stokes-Darcy system*, Wenbin Chen, Max Gunzburger, Dong Sun, and Xiaoming Wang, SIAM J. Numer. Anal. 51-5 (2013), pp. 2563-2584.
69. *A bound on the vertical transport of heat in the ultimate state of slippery convection at large Prandtl numbers*, Xiaoming Wang and Jared Whitehead, Journal of Fluid Mechanics, Volume 729 / August 2013, pp 103-122.
68. *Well-posedness of the Hele-Shaw-Cahn-Hilliard system*, Xiaoming Wang and Zhifei Zhang, Annales de l'Institut Henri Poincaré (C) Analyse Non Linéaire., Volume 30, Issue 3, May and June 2013, Pages 367-384.
67. *Boundary layers associated with a class of 3D nonlinear channel flows*, Anna Mazzucato, Dongjuan Niu and Xiaoming Wang. Indiana U. Math. Jour., vol. 60, no.4, 2011, pp. 1113-1136.
66. *A linear energy stable numerical scheme for epitaxial thin film growth model without slope selection*, Wenbin Chen, Sidafa Conde, Cheng Wang, Xiaoming Wang and Steven Wise, J. Sci. Comp., (2012) 52: 546-562,
65. *Long-time Behavior for the Hele-Shaw-Cahn-Hilliard System*, Xiaoming Wang and Hao Wu, Asymptotic Analysis, vol. 78, no.1, Aug. 2012, pp.217-245.
64. *An efficient second order in time scheme for approximating long time statistical properties of the two dimensional Navier-Stokes equations*, Xiaoming Wang, Numer. Math., Volume 121, Issue 4 (2012), Page 753-779.
63. *Boundary Layer for a Class of Nonlinear Pipe Flow*, Daozhi Han, Anna Mazuccato, Dongjuan Niu and Xiaoming Wang, Jour. Diff. Equations., Volume 252, Issue 12, 15 June 2012, Pages 6387-6413. DOI:10.1016/j.jde.2012.02.012.
62. *Calibrating the exchange coefficient in the modified coupled continuum pipe-flow model for flow in karst aquifers*, Nan Chen, Max Gunzburger, Bill Hu, Xiaoming Wang and Celestine Woodruff, J. Hydrology, 414-415 (2012) 294-301.
61. *Second-order convex splitting schemes for gradient flows with Enhrich-Schwoebel type energy: application to thin film epitaxy*, Jie Shen, Cheng Wang, Xiaoming Wang and Steven Wise, SIAM J. Numer. Anal. vol. 50, no.1, pp.105-125, 2012.
60. *Long time stability of a classical efficient scheme for two dimensional Navier–Stokes equations*, Sigal Gottlieb, Florentina Tone, Cheng Wang, Xiaoming Wang and Djoko Wirosoetisno, SIAM J. Numer. Anal. vol. 50, pp. 126-150, 2012.
59. *Experimental and computational validation and verification of the Stokes-Darcy and continuum pipe flow models for karst aquifers with dual porosity structure*, Bill Hu,

Xiaoming Wang, Max Gunzburger, Fei Hua and Yanzhao Cao, HYDROLOGICAL PROCESSES. Volume 26, Number 13, 30 June 2012 , pp. 2031-2040(10).

58. *Robin-Robin domain decomposition methods for the steady Stokes-Darcy model with Beavers-Joseph interface condition*, Yanzhao Cao, Max Gunzburger, Xiaoming He and Xiaoming Wang, NUMERISCHE MATHEMATIK, vol. 117 pp. 601-629, 2011.
57. *Approximation of the stationary statistical properties of the dynamical systems generated by the two-dimensional Rayleigh-Benard convection problem* , Florentina Tone and Xiaoming Wang, ANALYSIS AND APPLICATIONS, vol. 09, no. 4, (2011) 421-446.
56. *Analysis and finite element approximation of a coupled, continuum pipe-flow/Darcy model for flow in porous media with embedded conduits*, Yanzhao Cao, Max Gunzburger, Fei (Neil) Hua and Xiaoming Wang, NUM. METHODS FOR PDE, Vol. 27, no.5, pp.1242-1252, Sept. 2011.
55. *A parallel Robin-Robin domain decomposition method for the Stokes-Darcy system* Wenbin Chen, Max Gunzburger, Fei Hua and Xiaoming Wang, SIAM J. NUMER. ANAL., Vol. 49, No.3, pp. 1064-1084, 2011.
54. *Boundary layer associated with the Darcy-Brinkman-Boussinesq model for convection in porous media*, James Kelliher, Roger Temam and Xiaoming Wang, PHYSICA D: NONLINEAR PHENOMENA, vol 240(7), pp. 619-628, 2011.
53. *Partial and spectral viscosity models for geophysical flows* Qingshan Chen, Max Gunzburger and Xiaoming Wang, CHIN. ANN. MATH. SER. B, vol.31, no.5, pp. 579–606, 2010.
52. *Examples of boundary layers associated with the incompressible Navier-Stokes flows*, CHIN. ANN. MATH. SER. B, vol. 31, no.5, pp.781–792, 2010.
51. *Asymptotic analysis of the differences between the Stokes-Darcy system with different interface conditions and the Stokes-Brinkman system* Nan Chen, Max Gunzburger and Xiaoming Wang, J. MATHEMATICAL ANALYSIS AND APPLICATIONS, vol 368, no.2, 2010, pp.658-676.
50. *Unconditionally stable schemes for thin film epitaxy*, Cheng Wang, Xiaoming Wang and Steven Wise, DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS, SER. A vol. 28, no. 1, 2010, pp. 405-423. (an invited article in a special issue dedicated to Roger Temam).
49. *Analysis of Nonlinear Spectral Eddy-Viscosity Models of Turbulence* Max Gunzburger, Eunjung Lee, Yuki Saka, Catalin Trenchea and Xiaoming Wang J. SCIENTIFIC COMPUTING, vol. 45, no.1-3, pp.294–332, 2010.
48. *Finite element approximation of the Stokes-Darcy system with Beavers-Joseph interface interface boundary condition*, Yanzhao Cao, Max Gunzburger, Bill Hu, Fei Hua, Xiaoming Wang and Weidong Zhao, SIAM J. NUM. ANAL., Volume 47, Issue 6, pp. 4239-4256 (2010).
47. *On the coupled continuum pipe flow model (CCPF) for flows in karst aquifer.* DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS-B, Volume: 13, Number: 2, March 2010, p. 489-501.
46. *Coupled Stokes-Darcy model with Beavers-Joseph interface boundary condition*, Yanzhao Cao, Max Gunzburger, Fei Hua and Xiaoming Wang, COMMUNICATIONS IN MATH-

EMATICAL SCIENCES, special issue dedicated Andrew Majda. Accepted July 2008. Vol. 8, issue 1 (March 2010), p.1-25.

45. *Linear response theory for statistical ensembles in complex systems with time-periodic forcing.* Andrew Majda and Xiaoming Wang, COMM. MATH. SCI., special issue dedicated to Andy Majda, vol. 8, issue 1 (March 2010), p.145-172.
44. *Approximation of stationary statistical properties of dissipative dynamical systems: time discretization.* MATH. COMP., vol. 79 (2010) 259-280.
43. *Well-posedness of the infinite Prandtl number model for convection with temperature-dependent viscosity*, Max Gunzburger, Yuki Saka and Xiaoming Wang, ANALYSIS AND APPLICATIONS, Vol. 7, no. 3 (2009) 297-308.
42. *Upper semi-continuity of stationary statistical properties of dissipative systems*, DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS -A, special issue dedicated to Prof. Li Ta-Tsien. Vol. 23, no.1/2, pp.521-540, 2009.
41. *A semi-implicit scheme for stationary statistical properties of the infinite Prandtl number model*, W.Cheng and X. Wang, SIAM JOUR. NUM. ANAL., vol.47, no.1, 250-270, 2008.
40. *A uniformly dissipative scheme for stationary statistical properties of the infinite Prandtl number model for convection*, Wendy Cheng and Xiaoming Wang, APPLIED MATHEMATICS LETTERS, 21 (2008), 1281-1285.
39. *Bound on the vertical heat transport at large Prandtl number*, PHYSICA D, **237** (2008) 854-858.
38. *Stationary statistical properties of Rayleigh-Bénard convection at large Prandtl number*, COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS, 61 (2008), no. 6, 789–815.
37. *A note on the emergence of large scale coherent structure under small scale random bombardments: the discrete case*, A. Majda and X. Wang, J. MATH. PHYS., vol. 48, issue 6, pp. 065501-065501-10 (2007).
36. *A discrete Kato type theorem on inviscid limit of Navier-Stokes flows*, W. Cheng and X. Wang, J. MATH. PHYS. vol. 48, issue 6, pp. 065303-065303-14 (2007).
35. *Asymptotic behavior of global attractors to the Boussinesq system for Rayleigh-Bénard convection at large Prandtl number*, COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS, Volume 60, issue 9, pp.1293-1318, (September, 2007).
34. *On a Burgers' type equation*, Chun-Hsiung Hsia and Xiaoming Wang, DISCRETE AND CONT. DYN. SYS. B, vol. 6, no. 5, pp.1121-1139, 2006.
33. *The emergence of large-scale coherent structure under small-scale random bombardments*, Andrew J. Majda and Xiaoming Wang, COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS, Volume 59, Issue 4 (2006), pp.467-500.
32. *Validity of the One and One-Half Layer Quasi-Geostrophic Model and Effective Topography* Andrew Majda and Xiaoming Wang, COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS, Volume 30, Number 9, 2005, pp. 1305 - 1314
31. *Infinite Prandtl number limit of Rayleigh-Bénard convection*, Xiaoming Wang, COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS Volume 57, Issue 10 (p 1265-1282), 2004.

30. *Large Prandtl number behavior of the Boussinesq system of Rayleigh-Bénard convection*, Xiaoming Wang Appl. Math. Lett., vol. 17 (2004), 821-825.
29. *Energy equation methods on the existence of global attractor: the non-autonomous case*, Ioana Moise, Ricardo Rosa and Xiaoming Wang, Discrete and Cont. Dyn. Sys., Vol. 10, no1/2, pp.473-496, 2004.
28. *Boundary Layer Associated with the Incompressible Navier-Stokes Equations: the non-characteristic boundary case*, Roger Témam and Xiaoming Wang, J. Diff. Eqs. , Vol.179, (2002), 647-686.
27. *A Kato type theorem on zero viscosity limit of Navier-Stokes flows,* Xiaoming Wang, Indiana Univ. Math. Jour., Vol.50, No.1 (2001), 223-241.
26. *The Selective Decay Principle for Barotropic Geophysical Flows*, Andrew Majda and Xiaoming Wang, Methods and Applications of Analysis, vol. 8, no. 4, pp. 579 - 594, 2001.
25. *Boundary Layers in Channel Flows with Injection and Suction*, Roger Temam and Xiaoming Wang, Appl. Math. Lett., 14 (2001) 87-91.
24. *Effect of tangential derivatives in the boundary layer on the energy dissipation rate*, Physica D, 144(2000) 142-153.
23. *New Algorithms for a Class of PDE Displaying Boundary Layer Behavior*, Wenfang Cheng, Roger Témam and Xiaoming Wang, Methods and Applications of Analysis, vol.7, no. 2, pp. 363-390, 2000.
22. *Remarks on the Prandtl type equations with permeable wall*, Roger Temam and Xiaoming Wang, Zeitschrift für Angewandte Mathematik und Mechanik (ZAMM). 80(2000), 11-12, 835-843.
21. *Selective Decay for Geophysical Flows*, Andrew Majda, Sang-Yeun Shim and Xiaoming Wang, Dedicated to Cathleen Morawetz on the occasion of her 75th birthday, Methods and Applications of Analysis, vol. 7, no. 3, pp. 511 - 554, 2000.
20. *On the Behavior of the Solutions of Navier-Stokes Equations at Vanishing Viscosity*, Roger Temam and Xiaoming Wang, Annali della Scuola Normale Superiore di Pisa, vol. XXV, pp. 807-828, 1998.
19. *Attractor Dimension Estimates for Two-dimensional Shear Flows*, Charles Doering and Xiaoming Wang, Physica D, 123 (1998) 206-222.
18. *Boundary Layers for Chaffee-Infante Type Equations*, Roger Temam and Xiaoming Wang, Archivum Mathematicum (BRNO), Tomus 34 (1998), 217-226.
17. *Attractors for Non-Compact Semigroups via Energy Equations*, Ioana Moise, Ricardo Rosa and Xiaoming Wang, Nonlinearity, 11, 1998, 1369-1393.
16. *Attractors for Non-autonomous Non-homogeneous Navier-Stokes Equations*, Alain Miranville and Xiaoming Wang, Nonlinearity 10 (1997) 1047-1061.
15. *Time Averaged Energy Dissipation Rate of Boundary Driven Flows*, Physica D 99 (1997) 555-563.
14. *Asymptotic Analysis of the Linearized Navier-Stokes Equations in a General 2D Domain*, Roger Temam and Xiaoming Wang, Asymptotic Analysis, 14, 1997, pp.293-321.

13. *The Convergence of the Solutions of the Navier-Stokes Equations to that of the Euler Equations*, Roger Temam and Xiaoming Wang, Appl. Math. Lett. vol. 10, no. 5, pp. 29-33, 1997.
12. *Boundary Layers for Oseen Type Equation in Space Dimension Three*, Roger Temam and Xiaoming Wang, Russian Journal of Mathematical Physics, vol. 5, no. 2, 1997, pp. 227-246.
11. *Upper Bound on the Dimension of the Attractor for the Non-homogeneous Navier-Stokes Equations*, Alain Miranville and Xiaoming Wang, Discrete and Continuous Dynamical Systems Vol 2, No. 1, 1996, pp. 95-110.
10. *Asymptotic Analysis of Oseen Equations for Small Viscosity*, Roger Temam and Xiaoming Wang, Appl. Math. Lett. Vol. 9, No. 2, pp. 1-4, 1996.
9. *Asymptotic Analysis of Oseen Type Equations in a Channel at High Reynolds Number*, Roger Temam and Xiaoming Wang, [2], Indiana Univ. Math. J., 45(3), 1996, pp. 863-916.
8. *An Energy Equation for Weakly Damped Driven Nonlinear Schrödinger Equations and Its Application to Their Attractors*, Physica D 88 (1995) 167-175.
7. *Asymptotic Analysis of the Linearized Navier-Stokes Equations in a Channel*, Roger Temam and Xiaoming Wang, Differential and Integral Equations, vol. 8, no. 7, September 1995, 1591-1618.
6. *Estimates on the Lowest Dimension of Inertial Manifolds of the Kuramoto-Sivashinsky Equation in the General Case*, Roger Temam and Xiaoming Wang, Differential and Integral Equations, vol. 7, no. 4, July 1994, 1095-1108.
5. *A Remark on the Characterization of the Gradient of Distributions*, Applicable Analysis, vol 51, 1993, 35-40.
4. *On Operator Valued Roots of Commutative Analytic Functions (in Chinese)*, Chinese Annals of Mathematics, Series A, vol. 12, no. 1, 1991, 65-69.
3. *Commutants of Reductive Algebras and a Characterization of Property P (in Chinese)*, Chinese Annals of Mathematics, Series A, vol. 11, no. 1, 1990, 88-94.
2. *Some Results on WN(Weakly Normal) Operators (in Chinese)*, Journal of Fudan University, Natural Sciences, vol. 29, no. 2, 1990, 219-224.
1. *On Commutants of Reductive Algebras and Some Related Results (in Chinese)*, Journal of Fudan University, Natural Sciences, vol. 28, no. 1, 1989, 54-60.

ARTICLES IN REFEREED CONFERENCE PROCEEDINGS

1. *A Note on Long Time Behavior of Solutions to the Boussinesq System at Large Prandtl Number*, Xiaoming Wang, Contemporary Mathematics, vol. 371, pp. 315-323, 2005.
2. *Asymptotic Analysis of the Linearized Navier-Stokes Equations in a 2D Channel at High Reynolds Number*, Roger Temam and Xiaoming Wang, pp.165-172, in Geometry, Analysis and Mathematical Physics, World Scientific, Singapore, 1997.

[2]There is a featured review of this article in Math. Review 98a:35008

3. *Experimental and Numerical Investigation of Sinkhole Development and Collapse*, Xiaohu Tao, Ming Ye, Xiaoming Wang, Dangliang Wang, Roger Pacheco Castro, and Jian Zhao, in Proceedings of Sinkhole Conference 2015.

ARTICLES IN NON-REFEREED CONFERENCE PROCEEDINGS

1. *Stationary Statistical Properties of Some Fluid Systems*, Xiaoming Wang, Proceedings of the Fourth International Congress of Chinese Mathematicians, Vol. III, pp. 793-811, Higher Education Press, 2007.
2. *Approximating stationary statistical properties*, Chinese Ann. Math. Series B, (an invited article in a special issue dedicated to Andy Majda) vol. 30, no. 6, Nov. 2009, pp. 831-844. DOI 10.1007/s11401-009-0178-2

BOOKS

1. *Nonlinear Dynamics and Statistical Theory for Basic Geophysical Flows*, Andrew J. Majda and Xiaoming Wang, Cambridge University Press, 2006.
2. Chinese translation of *Introduction to P.D.E.s and Waves for the Atmosphere and Ocean by Andrew Majda*, N. Chen, X. Wang, J. Cheng, Y. Jiang, Science Press, Beijing, China, 2009.

BOOK CHAPTERS

1. *Elementary Statistical Theories with Applications to Fluid Systems*, in Nonlinear Conservation laws, Fluid Systems and Related Topics , edited by G-Q Chen, T.-T. Li and C. Liu, *Higher Education Press and World Scientific Press* 2009, pp.230-300.
2. *Fluctuation-dissipation theorem with application to climate change studies with seasonal impact*, Xiaoming Wang, in *Climate Change: multi-decadal and beyond*, edited by Chih-Pei Chang, Michael Ghil, Mojib Latif and John M. Wallace, World Scientific Press, 2016, pp. 53 – 66.

INVITED TALKS

1. PDE seminar, School of Mathematics, South China Normal University, Guangzhou, China, May 23, 2017.
2. Colloquium, Department of Mathematics, Indiana University – Bloomington, March 24, 2017.
3. SIAM-SEAS 2017, special session on *Numerical Methods in Fluid Mechanics with Applications*, Tallahassee, FL, March 18, 2017.
4. AMS Spring 2017 Southeastern Sectional Meeting, special session on *Numerical Methods for Coupled Problems in Computational Fluid Dynamics*, Charleston, SC, March 11, 2017.
5. JMM 2017, special session on *PDE analysis on Fluid Flows*, Atlanta, GA, January 7, 2017.
6. JMM 2017, special session on *Advances in numerical analysis for PDEs*, Atlanta, GA, January 5, 2017.
7. AMS Fall 2016 Western Sectional Meeting, special session on *Nonlinear and stochastic PDEs*, Denver, CO, Oct. 8, 2016.

8. MFO Workshop on Multiscale Interactions in Geophysical Fluids, Oberwolfach, Germany, Aug. 15-19, 2016.
9. The 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, special session on *Classical and geophysical fluid dynamics*, July 1-5, 2016, Orlando, FL.
10. The 10th International Conference on Scientific Computing and Application, June 6-10, 2016, Fields Institute, Toronto, Canada.
11. Banff workshop on hydrodynamics, June 6-10, 2016, Banff, Canada.
12. Challenges in non-equilibrium statistical physics and fluid dynamics, May 23-25, 2016, Provo, Utah.
13. Colloquium, School of Mathematics, May 10, 2016, Hohai University, Nanjing, China.
14. Colloquium, School of Hydraulics, May 11, 2016, Hohai University, Nanjing, China.
15. AMS Spring 2016 Southeastern Sectional Meeting, special session on PDES from fluids, Athens, GA, March 5 ? 6, 2016.
16. Colloquium, Institute of Mathematical Sciences, The Chinese University of Hong Kong, Hong Kong, China, January 27th, 2016.
17. International Conference on *Computational and Mathematical Problems in Material Science*, Hong Kong University of Science and Technology, Hong Kong, China, January 25 - 29, 2016.
18. JMM 2016, Special session on *Equations of Fluid Motion*, Seattle, WA, January 8th, 2016.
19. SIAM 2015 PDE Conference, special session on *Recent Advances in Theoretical and Numerical Aero- and Hydrodynamics*, Scottsdale, AZ, December 7-10, 2015.
20. SIAM 2015 PDE Conference, special session on *Singular Perturbations and Boundary Layers - Theory and Numerical Aspects*, Scottsdale, AZ, December 7-10, 2015.
21. Advances in Scientific Computing and Applied Mathematics, Las Vegas, Nevada, October 9-12, 2015.
22. International Workshop on Mathematics of Geophysical Flows and Turbulence, Fudan University, Shanghai, China. August 17-19, 2015.
23. ICIAM 2015, Mini-symposium on Theoretical and Numerical Studies of Phase Field Models, Beijing, China, August 13th, 2015.
24. ICIAM 2015, Mini-symposium on Vanishing Viscosity Limit and Incompressible Flow, Beijing, China, August 11th, 2015.
25. PDE seminar, Capital Normal University, Beijing, China, August 12th, 2015.
26. PDE seminar, Suzhou University, Suzhou, China, July 17, 2015.
27. Colloquium, School of Mathematical Sciences, Shanghai University of Finance and Economics, Shanghai, China, July 13th, 2015.
28. AMS Spring 2015 Western Sectional Meeting, special session on *Developments of Numerical Methods and Computations for Fluid Flow Problems*, University of Nevada, Las Vegas, Saturday April 18th, 2015.

29. AMS Spring 2015 Southeastern Sectional Meeting, special session on *Mathematical Fluid Dynamics and Turbulence*, Georgetown University, Washington DC, March 7, 2015.
30. JMM 2015, SIAM minisymposium on *PDEs and Applications*, San Antonio, TX, Jan. 10th, 2015.
31. AMS Fall 2014 Western Sectional Meeting, special session on *Nonlinear PDEs*, San Francisco, CA, October 25-26, 2014.
32. IPAM workshop on *Turbulent Transport and Mixing*, UCLA, Los Angeles, CA, October 13-17, 2014.
33. Colloquium, Department of Mathematics, University of Central Florida, Orlando, Florida, Oct. 2nd, 2014.
34. The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, special session on *Mathematical Modeling and Numerical Methods for Phase-field Problem* and special session on *Nonlinear evolution PDEs and interfaces in applied sciences*, July 7- 11, 2014. Madrid, Spain.
35. Fourth Workshop on Fluids and PDEs, IMPA, Rio de Janeiro, Brazil, May 26-30, 2014.
36. Colloquium, Department of Mathematics, Florida International University, March 31st, 2014, Miami, Florida.
37. Minisymposium on *Recent Advances in Modeling of Complex Systems: Analysis and Computation*, SIAM-SEAS 2014, Melbourne, FL. March 28-30, 2014.
38. *Workshop on Phase Field Models and Computation*, December 19th, 2013, Hong Kong Baptist University, Hong Kong.
39. *The second international conference on engineering and computational mathematics* (ECM2013), December 16-19, 2013, Hong Kong Polytechnic University, Hong Kong.
40. SIAM Conference on PDEs, mini-symposium on *Fluid Dynamic Equations : Existence and Asymptotic Between Theory and Numerics*, Orlando, Florida, December 10, 2013.
41. Applied Analysis and Computation Seminar, Department of Mathematics and Statistics, University of Massachusetts, Amherst, Nov. 5th, 2013.
42. Colloquium, Department of Mathematics, Tulane University, New Orleans, October 24th, 2013.
43. Applied Math Seminar, Michigan State University, East Lansing, October 11, 2013.
44. PDE seminar, Institute for Applied Physics and Computational Mathematics, Chinese Academy of Sciences, Beijing, China, July 24, 2013.
45. Applied Mathematics Seminar, Applied Mathematics Institute, Applied Mathematics and System Sciences, Chinese Academy of Sciences, Beijing, China, July 22, 2013.
46. Colloquium, School of Mathematics, Capital Normal University, Beijing, China, July 18, 2013.
47. *2013 International Workshop on Computational and Applied Mathematics* organized by Beijing Computational Science Research Center, May 20-24, 2013, Yellow Mountain, China.

48. *The 2013 International Conference on Mathematical Modeling and Computation* (ICMMC2013), May 16-19, 2013, at Wuhan University, Wuhan, China.
49. Colloquium, Department of Mathematics, North Carolina State University, April 4th, 2013.
50. Workshop on *Uncertainty Quantification*, Courant Institute, NYU, NY, NY, Nov. 30-Dec. 1, 2012.
51. *NTU International Science Conference on Climate Change: multidecadal and beyond*, Sept. 17-20, 2012, National Taiwan University, Taipei, Taiwan, China.
52. MAA Florida Chapter Meeting, Nov. 16 -17, 2012, University of West Florida, Pensacola, Florida.
53. *International Conference on Mathematical Modeling, Analysis and Computation* (ICM2AC), Xiamen University in Xiamen, China, July 21-25 (Sat-Wed), 2012.
54. *International Conference on Computational Science*, Shanghai, China, July 16-20, 2012.
55. *9th AIMS Conference on Dynamical Systems, Differential Equations and Applications*, Orlando, Florida, USA, July 1-5, 2012.
56. *Workshop on Long time stochastic and statistical approximations for turbulent dynamical systems*, May 24 - 27 (Thurs.-Sun.) 2012, Fudan University, Shanghai, China
57. Mathematics and Statistics Colloquium, Auburn University, Auburn, AL, March 9, 2012.
58. SIAM Conference on Analysis of PDEs, special session on *Connections Between Dispersive PDE's and Fluid Mechanics*, Tues. Nov. 15, San Diego, CA, 2011.
59. SIAM Conference on Analysis of PDEs, special session on *Analysis Issues in the Study of Liquid Crystals and Related Areas*, Tues. Nov. 15, San Diego, CA, 2011.
60. SIAM Conference on Analysis of PDEs, special session on *Partial Differential Equations for Non-linear Processes in Porous Media*, Wed. Nov. 16, San Diego, CA, 2011.
61. SIAM Conference on Analysis of PDEs, special session on *Turbulence and Statistical Solutions in Incompressible Flows*, Wed. Nov. 16, San Diego, CA, 2011.
62. Mathematics Colloquium, Missouri University of Science and Technology, Rolla, Missouri, Oct. 14, 2011.
63. Workshop on *Statistical Inverse Modeling of Complex Nonlinear Systems*, Monday Sept. 5 - Fri. Sept. 9, 2011, Fudan University, Shanghai, China .
64. Applied Mathematics Seminar, Institute of Mathematics, Federal University at Rio de Janeiro, Brazil, July 4, 2011.
65. Third Workshop on Fluids and PDEs, Campinas, SP, Brazil, June 28, 2011.
66. Shanghai E-Institute Colloquium, Shanghai Normal University, Shanghai, June 17, 2011.
67. 2011 International Conference on Applied Mathematics and Interdisciplinary Research, Chern Institute of Mathematics, Nankai University, Tianjin, China, June 13-15, 2011.
68. AMS Spring 2011 Las Vegas Meeting, Special session on "Recent Developments in Stochastic Partial Differential Equations", Las Vegas, Nevada, April 30-May 1, 2011.
69. Applied Mathematics Colloquium, U. Colorado Boulder, April 22, 2011.

70. Center for Nonlinear Analysis Seminar, Carnegie-Mellon University, April 12, 2011.
71. Mathematics Colloquium, Mathematics Department, Virginia Tech, Blacksburg, VA, Dec. 10, 2010.
72. Institute for Scientific Computing and Applied Mathematics Seminar, Indiana University, Bloomington, IN, Nov. 16, 2010.
73. Workshop on *Modern Applied Mathematics*, Yellow Mountain, Anhui, and Fudan University, Shanghai, China, Oct. 25 – Nov. 4, 2010.
74. Applied Mathematics Seminar, Drexel University, Philadelphia, PA, Sept. 27, 2010.
75. Workshop on *Mathematical theory and modelling in atmosphere-ocean science*, Mathematisches Forschungsinstitut Oberwolfach, Germany, Aug. 8-14 2010.
76. *SIAM Annual Meeting*, Mini-symposium on *Flow through porous media and related topics*, Pittsburgh, PA, July 12-16, 2010.
77. *International workshop on Scientific Computing and Nonlinear Partial Differential Equations*, Jiuzhaigou National Park, Sichuan, China, June 7-10, 2010.
78. *International conference on advances in PDEs and their applications*, Shanghai, China, June 2, 2010.
79. IPAM workshop on *Data hierarchies for climate modeling*, UCLA, May 27, 2010.
80. *Iowa PDE conference*, Iowa City, Iowa, May 1, 2010.
81. IMA workshop on *Transport and mixing in complex and turbulent flows*, April 13, 2010.
82. Mathematics Colloquium, Iowa State University, Mar. 30, 2010
83. IMA seminar, IMA, UMN, Mar. 23, 2010
84. Mathematics Colloquium, The University of Tennessee at Knoxville, Mar. 5, 2010.
85. Applied mathematics seminar, The University of South Carolina, Feb. 3, 2010.
86. AMS 2010 Annual Meeting, San Francisco, California, special session on *Analysis and control under uncertainty*, Jan. 13-16, 2010.
87. *Workshop on Stochastic and statistical methods in multi-scale systems*, Shanghai, China, December 6 - December 19 , 2009.
88. MAA Florida Chapter Meeting, Nov. 20 -21, 2009, University of West Florida, Pensacola, Florida.
89. AMS 2009 Fall Western Section Meeting, Riverside, California. Special session on *Fluid Mechanics*, Nov. 7, 2009.
90. AMS 2009 Fall Southeast section meeting, Boca Raton, Florida. Special session on *Partial Differential Equations from Fluid Mechanics*. Oct. 31, 2009.
91. PDE seminar, Georgia Tech, Oct. 13, 2009
92. *International Conference on the Mathematical Theory of Liquid Crystal, Ferromagnetism and Related Topics*. June 29- July 3, 2009. South China Normal University, Guangzhou, P.R. China.
93. Colloquium, Department of Mathematics, The University of Massachusetts Dartmouth, May 6, 2009.

94. SIAM Conference on Computational Science and Engineering (CSE09), March 2-6, 2009, Miami, Florida.
95. Colloquium, Department of Mathematics, The University of Pittsburgh, Feb. 27, 2009
96. Applied Mathematics Seminar, Courant Institute, New York University, Feb. 6th, 2009
97. *International Conference on Contemporary Applied Mathematics*, Shanghai, China, Jan. 19-23, 2009
98. Applied and Computational Mathematics Seminar, University of North Carolina at Charlotte, Dec. 3rd, 2008.
99. *MFO workshop on Infinite dimensional random dynamical systems and their applications*, Mathematisches Forschungsinstitut Oberwolfach, Germany, Nov. 2-8, 2008.
100. *Workshop on PDE and Fluids II, IM-UFRJ*, Rio de Janeiro, Brazil, Aug. 13-15, 2008
101. *Frontiers in Modern Applied Mathematics*, Fudan University, Shanghai, China, June 16-26, 2008.
102. *7th International Conference on Dynamical Systems and Differential Equations*, Arlington, Texas, May 18-21, 2008.
103. AMS 2008 Spring Central Section Meeting, Special session on Recent Advances in Classical and Geophysical Fluid Dynamics, Bloomington, IN, April 5-6, 2008.
104. *Fourth International Congress of Chinese Mathematicians*, Dec. 17-23, 2007, Hangzhou, China.
105. SIAM Conference on PDEs, special session on *Recent Advances in Navier-Stokes and Geophysical Fluid Dynamics*, Dec. 10-12, 2007, Mesa, AZ.
106. Applied and Interdisciplinary Mathematics Seminar, The University of Michigan, Ann Arbor, MI, Oct. 26, 2007.
107. Colloquium in Computational and Applied Mathematics, Pennsylvania State University, PA, Aug. 31, 2007.
108. Supplementary Lipschitz Lectures, Institute for Applied Mathematics, Bonn University, Bonn, Germany, May 9 and 15, 2007.
109. Analysis Seminar, Courant Institute of Mathematical Sciences, New York University, New York, NY, March 29, 2007.
110. Colloquium, School of Mathematics, Sun Yat-Sen University, Guangzhou, China, Mar. 8, 2007
111. Colloquium, School of Mathematics, South China University of Technology, Guangzhou, China, Mar. 8, 2007
112. *IPAM workshop on Small Scales and Extreme Events: The Hurricane*, IPAM, UCLA, LA, February 12 - 16, 2007.
113. AMS 2007 Annual Meeting, *Special Session on Recent Developments in Analysis and Numerics of Geophysical Fluid Dynamics Problems*, New Orleans, LA, January 5-8, 2007.
114. *Perspectives in Fluid Dynamics*, Dec. 4 - 8, 2006, Bernoulli Center, École Polytechnique Fédérale de Lausanne, Switzerland.

115. AMS 2006 Fall Southeastern Section Meeting, *Special Session on Progress on Problems in Mathematical Fluid Dynamics*, Fayetteville, AR, Nov. 3-4, 2006.

116. Applied Mathematics Seminar, Department of Mathematics, Duke University, Durham, NC, Oct. 30, 2006.

117. AMS 2006 Fall Central Section Meeting, *Special Session on Nonlinear Partial Differential and Its Applications*, Cincinnati, OH, Oct. 21-22, 2006.

118. Colloquium, Department of Mathematics, University of Kentucky, Lexington, Kentucky, Oct. 19, 2006.

119. CDSNC Colloquium, School of Mathematics, Georgia Institute of Technology, Atlanta, GA, Oct. 2, 2006.

120. *MFO workshop on Mathematical Theory and Modelling in Atmosphere-Ocean Science*, Mathematisches Forschungsinstitut Oberwolfach, Germany, Aug. 20-26, 2006.

121. *International Conference on recent advances in scientific computation*, Beijing Normal University, Beijing, China, June 18-19, 2006.

122. Colloquium, School of Mathematics, Capital Normal University, Beijing, China, June 16, 2006.

123. *2006 International Conference on Applied Mathematics and Interdisciplinary Research*, Nankai University, Tianjing, China, June 12-15, 2006.

124. *ECNU Workshop on Nonlinear Differential Equations*, East China Normal University, Shanghai, China, June 10-11, 2006.

125. *NCAR Workshop on Multi-scale processes for low frequency variability, climate, and climate change response* Boulder, CO, May 15-19, 2006.

126. *International Congress on the Applications of Mathematics* organized by the Latin American Mathematical Union (UMALCA), the European Mathematical Society (EMS) and the Society for Industrial and Applied Mathematics (SIAM), Santiago, Chile, March 13-17, 2006.

127. *American Institute of Mathematics Workshop on Mathematical and Geophysical Fluid Dynamics: Analytical and Stochastic Methods*, Palo Alto, CA, Feb. 13-17, 2006.

128. Analysis Seminar, Courant Institute of Mathematics, New York University, Nov. 17, 2005.

129. *MSRI Workshop on Analytical and Stochastic Fluid Dynamics* Oct. 10 - Oct. 14, 2005. Berkeley, CA.

130. The Institute for Scientific Computing and Applied Mathematics Seminar, Aug. 31th, 2005, Indiana University, Bloomington, IN.

131. *International Conference on Nonlinear Evolution Equations and Infinite Dimensional Dynamical Systems*, June 2-6, 2005, Nanjing, China.

132. PDE Seminar, School of Mathematics, Fudan University, Shanghai, China, June 10, 2005.

133. AMS 2005 Spring Southeastern Section Meeting March 18-19, 2005, Bowling Green, KY, Special sessions on *Nonlinear Analysis and Applied Mathematics*.

134. SIAM Conference on Analysis of PDEs, mini-symposium *PDE Problems in Fluid Dynamics and Geophysical Fluid Dynamics*, Dec. 6-8, 2004, Houston, Texas.

135. SIAM Conference on Nonlinear Waves and Coherent Structures, Mini-symposium *Coherent Structures for the Atmosphere and Oceans*, Oct. 2-4, 2004, Orlando, Florida.

136. *International Conference on Numerical and Applied PDEs*, June 23 - June 28, 2004, Jilin University, Changchun, China

137. Colloquium, Department of Mathematics, Shanghai Jiaotong University, Shanghai, China, June 15th, 2004.

138. Colloquium, Department of Mathematics, Oklahoma State University, Stillwater, Oklahoma, Apr. 30th, 2004.

139. AMS Western Section Meeting in Los Angeles, CA, Apr. 3-4, 2004, Special session on *Recent Advances in the Mathematical Analysis of Geophysical and Hydrodynamical Models*

140. Colloquium, Department of Mathematics, The University of Southern California, Los Angeles, CA, Apr. 2nd, 2004.

141. Applied Mathematics Seminar, Center for Scientific Computing and Mathematical Modeling (CSCAMM), The University of Maryland, University Park, Maryland, Nov. 5th, 2003.

142. Analysis/PDE Seminar, Department of Mathematics, University of Virginia, Charlottesville, VA, Nov. 4th, 2003.

143. Colloquium, Institute of Mathematics, Fudan University, Shanghai, China, Aug. 17th, 2003

144. Workshop on fluid problems, Department of Mathematics, Fudan University, Shanghai, China, July 25th, 2003.

145. International Conference on Nonlinear Evolution Equations and Applications, June 12-15, 2003, Northwestern University, Evanston, IL.

146. SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 27-31, 2003.

147. Applied Math Seminar, Department of Mathematics, The University of California, Irvine, CA, Apr. 28th, 2003.

148. AMS Central Section Meeting in Bloomington, Special session on *Mathematical and Computational Problems in Fluid Dynamics and Geophysical Fluid Dynamics*, Bloomington, IN, Apr. 4-6, 2003.

149. Applied Math Seminar, Department of Mathematics, Purdue University, West Lafayette, IN, Apr. 4th, 2003.

150. Colloquium, Department of Mathematics, Florida State University, Tallahassee, Florida, Jan. 24, 2003.

151. Colloquium, Department of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy, New York, Nov. 18, 2002.

152. Applied Math. Seminar, School of Mathematics, Institute for Advanced Study, Princeton, New Jersey, Nov. 8, 2002.

153. Colloquium, Department of Mathematics, Shanghai Jiaotong University, Aug. 30, 2002, Shanghai, China.

154. ICM 2002, Satellite Conference on Scientific Computing, August 15 - 18, 2002, Xi'an, China.

155. Fourth International Conference on Dynamical Systems and Differential Equations, Special Session on *Mathematical Issues of Geophysical Fluid Dynamics*, Wilmington, NC, USA, May 24-27, 2001.

156. Special Analysis Seminar, Courant Institute, NYU, Feb. 5, 2002.

157. AMS/MAA Joint Annual Meeting, Special Session on *Recent Developments on Analysis and Numerics for Fluid Problems*, Dedicated to the memory of J.L. Lions, Jan. 2002, San Diego.

158. Colloquium, Institute of Mathematics, Tongji University, Shanghai, China, June 5, 2001.

159. Colloquium, Institute of Mathematics, Fudan University, Shanghai, China, June 4, 2001.

160. International Workshop on Computational Methods for Continuum Physics and Their Applications (IWCCPA), Nanjin, China, May 21-24, 2001.

161. Applied Mathematical and Computational Science Colloquium, Department of Mathematics, The University of Iowa, IA, Thursday April 19, 2001.

162. Colloquium, Department of Mathematics, The University of Kentucky, Lexington, KY, Thursday April 12, 2001.

163. Math. Club Presentation, Department of Mathematics and Computer Sciences, Loras College, Dubuque, IA, Nov. 27, 2000.

164. Colloquium, Department of Mathematics, Iowa State U., Nov. 13, 2000.

165. Colloquium, Department of Mathematics, Hong Kong University of Science and Technology, June 7, 2000.

166. Year 2000 International Conference on Dynamical Systems and Differential Equations, Special session on "Dynamical Systems with Applications in Fluid Mechanics", Kennesaw, GA, May 18 - 21, 2000

167. Applied Math Seminar, Department of Mathematics, Pennsylvania State University, Feb. 25, 2000.

168. Colloquium, Department of Mathematics, Georgetown University, Feb. 23, 2000.

169. Colloquium, Department of Mathematics, Iowa State U., Nov. 12, 1999.

170. Special Analysis Seminar, Courant Institute of Mathematical Sciences, New York University, October 13, 1999.

171. PDE Seminar, Department of Mathematics, Indiana University-Bloomington, October 4, 1999.

172. International Conference on Applied PDEs, Tongji University, Shanghai, China, July 13 - July 16.

173. Workshop on Problems Related to Various Fluid Dynamics Equations, Organized by F-H. Lin, Center for Mathematical Sciences, Zhejiang University, Hang Zhou, China, June 16 - June 20, 1999.

174. PDE Seminar, Institute of Mathematics, Fudan University, Shanghai, China, June 10, 1999.
175. Conference on Differential Equations from Mechanics, Institute of Mathematical Sciences, Chinese University of Hong Kong, Hong Kong, May 31 - June 6, 1999.
176. Fifth SIAM Conference on Applications of Dynamical Systems, mini-symposium on "Applied analysis of the Navier-Stokes and related equations", Snowbird, Utah, May 22 - May 27, 1999.
177. AMS Annual Meeting at San Antonio, Texas, Special Session dedicated to Jean Leray, January 15, 1999.
178. Los Alamos National Laboratory, Center for Nonlinear Study, March 18, 1998.
179. Los Alamos National Laboratory, Center for Nonlinear Study, March 16, 1998.
180. First Tian-Yuan Mathematics Conference, UC Berkeley, June 1997.
181. Los Alamos National Laboratory, Center for Nonlinear Study, May 1996
182. Seminar, Université Paris-Sud, Department of Mathematics, April 10, 1996
183. Colloquium, Arizona State University, Department of Mathematics, March 28, 1996.
184. Colloquium, Iowa State University, Department of Mathematics, March 1996.
185. International Conference on Nonlinear Evolution Equations and Infinite Dimensional Dynamical Systems, Shanghai, China, June, 1995
186. International Workshop on Inertial Manifold, Approximate Inertial Manifold & Related Numerical Algorithms, Xi'an, China, June, 1995

MINI COURSE/ LECTURE SERIES

1. The Institute of Mathematical Sciences, The Chinese University of Hong Kong, *Boundary Layer Theory for Incompressible Fluids*, Hong Kong, China, May 14 - June 14, 2000.
2. School of Mathematics, Fudan University, *Mathematical Introduction to Geophysical Fluid Dynamics*, Shanghai, P.R. China, June 3rd - July 3rd, 2004.
3. School of Mathematics, Northwestern University, *Introduction to Mathematical Analysis of Incompressible Fluids*, Xi'an, P.R. China, August 8th - August 20th, 2004.
4. School of Mathematics, Fudan University *Introduction to Statistical Theory in Fluid Dynamics*, Shanghai, China, June 21-28, 2006.
5. Institute of Mathematical Sciences, The Chinese University of Hong Kong, *Lectures on stationary statistical properties*, Hong Kong, Feb. 6- Mar. 9, 2007.
6. School of Mathematics, Fudan University, *Introduction to Statistical Theories for PDEs with Applications*, Shanghai, China, July 5-19, 2007.
7. Summer School/Workshop on Stochastic Probabilistic Methods for Atmosphere, Ocean and Climate Dynamics, *Elementary Statistical Theories for Basic Geophysical Flows*, University of Victoria, Victoria, BC, CA, July 14-25, 2008.
8. Peking (Beijing) University 2013 Summer School on Applied Mathematics, *Introduction to Geophysical Fluid Dynamics*, Beijing University, Beijing, China, July 8- Aug. 2, 2013.

INVITED POSTER SESSION

Nonlinear Analysis 2000, Courant Institute, NYU, New York, May 28 - June 2, 2000.

HONORS/AWARDS

The 1992 *James P. Williams Memorial Award*, Indiana University–Bloomington

The 1993 *Robert E. Weber Memorial Award* by the Alumni Board of The College of Arts and Sciences, Indiana University–Bloomington

The 1993, 1994 and 1995 *Eberhard E. Hopf Graduate Fellowship* by the University Graduate School, Indiana University

The 1995 *John Ewing Book Award*, Indiana University–Bloomington and Springer-Verlag Inc.

Outreach service award, College of Liberal Arts and Sciences, Iowa State University, 2000

Invitee of the 2003 ISU Academic Excellence Banquet (Student's Choice).

GRANTS

- External Grants
  1. *Some Problems Related to Fluid and Geophysical Fluid Dynamics*, sole PI, NSF DMS9971986, 1999-2003.
  2. The Institute for Mathematics and Its Application Conference Fund, co-PI, (PI Paul Sacks), Spring 2002.
  3. American Mathematical Society /NSF travel fund for ICM2002 in Beijing, sole PI, 2002.
  4. *Singularity Formation in Nonlinear Evolution Equations*, Co-PI, (PI Paul Sacks), NSF DMS0130702, 2001-2002.
  5. *Asymptotic and Statistical Behavior of Hydrodynamic Problems*, sole PI, NSF DMS0310704, 2003-2005.
  6. *Asymptotic and Statistical Behavior of Hydrodynamic Problems*, sole PI, NSF DMS0549368, 2005-2007.
  7. *Uncertainty Analysis in Certain Fluid Problems*, sole PI, NSF DMS0606671, 2006-2010.
  8. *CMG Collaborative Proposal: Multiphysics and multiscale modeling, computations, and experiments for karst aquifers*, Co-PI, (PI Max Gunzburger), NSF DMS0620035, 2006-2010.
  9. *SCREMS: High Performance Computing and Visualization*, Co-PI, (PI Gordon Erlebacher), NSF DMS0724273, 2007-2009.
  10. Subcontract from IMA to participate in the annual program on *Complex Fluids and Complex Flows*, sole PI, Spring, 2010.
  11. *International conference on advances in PDEs and their applications*, Co-PI, (PI Jie Shen), NSF DMS1002618, 2010-2011
  12. *Modern Applied Mathematics at Fudan University* (111 project), primary oversea participant and organizer, (PI Cheng, Jin), Ministry of Education, People's Republic of China, 2008-2012. 4,500,000CNY.

13. *Quantifying long time statistical properties of a few fluid models*, sole PI, NSF DMS1008852, 2010-2014. $271,525
14. *Modern Applied Mathematics at Fudan University* (111 project), primary oversea participant and organizer, (PI Cheng Jin), Ministry of Education, People's Republic of China, 2013-2018. 4,500,000CNY.
15. *Two phse flows in karstic geometry*, sole PI, NSF DMS1312701, 2013-2017. $249,998.
16. *Some Mathematical Problems Associated with Hyporheic Flow*, sole PI, NSF DMS1715504, 2017-2020. $266,004.

- Internal Grants
  1. The 1999 Faculty Development Fund of the College of Liberal Arts and Sciences, Iowa State University.
  2. The 2000, 2001, 2002 Miller Lecture Fund from Iowa State University.
  3. The 2001 Foreign Travel Fund from Iowa State University.
  4. *Convection at Large Prandtl and Small Ekman Number*, sole PI, FSU 2005 COFRS award.
  5. *Laboratory study and numerical simulation of water flow and solute transport in a karst aquifer*, Co-PI, (PI Bill Hu), FSU CRC Interdisciplinary Support Program, 2005-2006.
  6. *A new conduit flow process (CFP) model for flows in karst aquifers*, sole PI, FSU 2010 COFRS award.
  7. *Two-phase flow in karst region*, sole PI, FSU Spring 2012 Planning Grant.
  8. *Mathematical and Experimental Investigation of Catastrophic Sinkhole Collapse*, lead PI, FSU 2014 Multidisciplinary Support Grant, 2014-2015.

MEDIA EXPOSURE

NPR/WFSU news clip on my team's work on sinkhole formation and collapse first aired on August 18, 2014.
http://news.fsu.edu/multimedia/radio/2014/08/18/fsu-researchers-studying-sinkhole-patterns

PBS NOVA program: Sinholes - Buried alive, first aired on Wednesday, January 28th, 2015, also featured my team's work on sinkhole formation and collapse.

MEMBERSHIP in PROFESSIONAL SOCIETIES

American Mathematical Society (AMS)

Society for Industrial and Applied Mathematics (SIAM)

SERVICE

- Administrative work
  - Director of Applied and Computational Mathematics, Florida State University, Aug. 2009 – July 2012
  - Chairman, Department of Mathematics, Florida State University, Aug. 2012 – May 2017.

- Editorial Work

  Associate Editor (vice editor-in-chief), 2008–present, Mathematical Methods in the Applied Sciences, John Wiley & Sons. (http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-1476/homepage/EditorialBoard.html)

  Advisory Editor, 2002–2007, Mathematical Methods in the Applied Sciences, John Wiley & Sons.

  Member of Editorial Board, 2012–present, Asymptotic Analysis, IOS press. (http://www.iospress.nl/journal/asymptotic-analysis/)

  Special Issue Guest Editor, 2009–2010, Discrete and Continuous Dynamical Systems, A, AIMS. (Temam issue)

  Special Issue Guest Editor, 2009–2010, Chinese Annals of Mathematics, Springer. (Temam issue)

  Special Issue Guest Editor, 2008–2009, Communications in Mathematical Sciences, International Press. (Majda issue)

  Special Issue Guest Editor, 2008–2009, Discrete and Continuous Dynamical Systems, A, AIMS.

  Special Issue Guest Editor, 2009, Chinese Annals of Mathematics, Springer. (Majda issue)

- Service to the Professional Society
  - Treasurer, SIAM-SEAS, 2015 - 2016.
  - President, SIAM-SEAS, 2016 - 2017 (https://www.siam.org/sections/seas/).
- Conference/Workshop/Mini-symposium Organization
  - Conference/Workshop organization
    1. Co-organizer of Iowa PDE/Applied Mathematics Meeting, April, 2000
    2. Co-organizer, NSE at ISU weekend, April 2000
    3. Co-organizer, Conference on Singularity Formation in Nonlinear Evolution Equations, June 2002.
    4. Co-organizer of Iowa PDE/Applied Mathematics Meeting, April, 2003
    5. Co-organizer, *Workshop on Numerics on Stochastic Differential Equations with Applications*, Tallahassee, FL, Feb. 26 –Mar. 2, 2006.
    6. Member of the Global Organizing Committee, *7th International Conference on Dynamical Systems and Differential Equations*, Arlington, Texas, May 18-21, 2008.
    7. Co-organizer, *Frontiers in Modern Applied Mathematics*, Shanghai, China, June 16-27, 2008.
    8. Co-organizer, *International Conference on Contemporary Applied Mathematics*, Shanghai, China, Jan. 19-23, 2009.
    9. Co-organizer, *Workshop on Stochastic and statistical methods in multi-scale systems*, Shanghai, China, Dec. 6-19, 2009.
    10. Co-organizer, *International conference on advances in PDEs and their applications*, Shanghai, China, May 31-June 4, 2010

11. Co-organizer, Workshop on *Modern Applied Mathematics* at Fudan University, Shanghai, China, Oct. 25 - Nov. 4, 2010.
12. Co-organizer, *Workshop on Statistical Inverse Modeling of Complex Nonlinear Systems*, Monday Sept. 5 - Fri. Sept. 9, 2011, Fudan University, Shanghai, China
13. Co-organizer, *Workshop on Long time stochastic and statistical approximations for turbulent dynamical systems* May 24 - 27 (Thurs.-Sun.) 2012, Fudan University in Shanghai, China
14. Co-organizer, IMA Workshop on *Stochastic Modeling of the Oceans and Atmosphere*, March 11-15, Spring 2013, Minneapolis, MN.
15. Co-organizer, ICIAM 2015 Satellite Conference on *Mathematics of Geophysical Flows and Turbulence*, Fudan University, Shanghai, China, August 17-19, 2015.
16. Co-organizer, SIAM-SEAS 2017, Tallahassee, FL, March 18-19, 2017.

– Mini-symposium/Special Session organization

1. Co-organizer, special session on *PDEs from Mechanics: Theoretical and Numerical Methods*, AMS western section meeting in Las Vegas, April 2001.
2. Co-organizer, Special session on *Recent Developments on Analysis and Numerics for Fluid Problems*, AMS/MAA Annual Meeting in San Diego, January 2002.
3. Organizer, Special session on *PDEs and Turbulence*, AMS sectional meeting in Tallahassee, March 2004
4. Co-organizer, Special session on *Modeling and Simulation of Complex Fluids System*, AMS sectional meeting in Tallahassee, March 2004
5. Co-organizer, Special session on *Fluid and Geophysical Fluid Problems*, AIMS' fifth international conference on Dynamical Systems and Differential Equations, California State Polytechnic University, Pomona, June 16 - 19, 2004.
6. Co-organizer, AMS meeting in Miami, Special Session on *Recent Developments on Fluid and Geophysical Fluid Dynamics*, April 2006.
7. Co-organizer, Special session on *Recent Advances in Fluid and Geophysical Fluid Problems*, AIMS' seventh international conference on Dynamical Systems and Differential Equations, Arlington, Texas, May 18-21, 2008.
8. Co-organizer, Special session on *Numerical methods for flows in karst aquifer*, SIAM Conference on Computational Science and Engineering (CSE09), March 2-6, 2009, Miami, Florida.
9. Co-organizer, special session on *Analysis and control under uncertainty*, AMS 2010 annual meeting, San Francisco, CA, Jan. 13-16, 2010.
10. Co-organizer, Mini-symposium on *Multi-phase flows in porous media and related problems*, 9th AIMS conference on Dynamical Systems, Differential Equations and Applications, Orlando, Florida, USA, July 1-5, 2012
11. Co-organizer, Minisymposium on *Multiphase flow/fluid-structure interaction/deforming boundary problems*, SIAM-SEAS 2014, Melbourne, FL. March 28-30, 2014.
12. Co-organizer, SIAM-SEAS 2016 Special session on *fluids: modeling, analysis and simulation*, Athens, GA, March 12-13, 2016.

13. Co-organizer, AIMS 2016, special session on *Numerical methods for phase-field models*, Orlando, FL, July 1-5, 2016.
14. Co-organizer, SIAM-SEAS 2017, special session on *Theoretical and computational issues in geosciences and engineering*, Tallahassee, FL, March 18-19, 2017.
15. Co-organizer, Special Session on *Nonlinear and Stochastic Partial Differential Equations: Theory and Applications in Turbulence and Geophysical Flows*, AMS eastern sectional meeting, Hunter College, NY, NY, May 6-9, 2017.

– Co-organizer, Shanghai Summer School, May 2004-July 2004, Shanghai, China

- **Reviewer/Panelist**

Referee for Journals and Books Advances in Partial Differential Equations, Advances in Water Resources, Applied Mathematics Letters, Applied Mathematics Research Express, Arabian Journal for Science and Engineering, Archive for Rational Mechanics and Analysis, Asymptotic Analysis, Communications in Mathematical Physics, Communications in Mathematical Sciences, Communications in PDE, Communications on Pure and Applied Analysis, Communications on Pure and Applied Mathematics, Contemporary Mathematics, Continuum Mechanics and Thermodynamics, Discrete and Continuous Dynamical Systems, Electronic Journal of Differential Equations, Handbook of Numerical Analysis, Hydrology and Earth System Sciences, Indiana University Mathematics Journal, Journal of Atmospheric Sciences, Journal of Chemical Information and Computer Science, Journal of Computational Physics, Journal of Differential Equations, Journal of Fluid Mechanics, Journal of Functional Analysis, Journal of Mathematical Physics, Journal of Nonlinear Sciences, Mathematische Annalen, Mathematics of Computation, Mathematical Methods in the Applied Sciences, Mathematical Modeling and Numerical Analysis, McGraw-Hill, Methods and Applications of Analysis, Math. Review, Nonlinear Analysis TMA, Nonlinearity, Numerical Methods for PDEs, Physics of Fluids, Physica D, Physics Letters A, Physics Review E, SIAM Journal on Applied Dynamical System, SIAM Journal on Applied Mathematics, SIAM Journal on Control and Optimization, SIAM Journal on Mathematical Analysis, SIAM Journal on Numerical Analysis, Springer, Wiley

Reviewer/Panelist for Funding Agencies

– Austrian Science Fund (FWF),
– French-speaking arm of Belgian research institute
– Florida State University
– Louisiana Board of Regents
– National Science Foundation
– Natural Sciences and Engineering Research Council of Canada (NSERC)
– New York University
– Research Grant Council (RGC) of Hong Kong
– The Netherlands Organization for Scientific Research (NWO)
– The Swedish Research Council
– University of New Hampshire