Mimi Dai

Professor

Department of Mathematics, Statistics, and Computer Science
Univeristy of Illinois at Chicago
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Appointments

2023-present **Professor**, *Department of Mathematics, Statistics, and Computer Science*, University of Illinois at Chicago.

2022-2023 **Visiting Fellow**, *Department of Mathematics*, Princeton University, Princeton.

2021-2022 **von Neumann Fellow**, *School of Mathematics*, Institute for Advanced Study, Princeton.

2020-2023 **Associate Professor**, *Department of Mathematics, Statistics, and Computer Science*, University of Illinois at Chicago.

2016-2020 **Assistant Professor**, *Department of Mathematics, Statistics, and Computer Science*, University of Illinois at Chicago.

2013-2016 **Research Assistant Professor**, *Department of Mathematics, Statistics, and Computer Science*, University of Illinois at Chicago.

2012-2013 **Research Postdoctoral**, *Department of Applied Mathematics*, University of Colorado at Boulder.

Education

2006-2012 **Ph. D**, *Mathematics*, University of California at Santa Cruz.
Advisers: Maria Schonbek & Jie Qing

2002-2006 **BS**, *Mathematics*, University of Science and Technology of China.

Research Interests

Nonlinear partial differential equations, fluid dynamics, harmonic analysis, complex fluids.

Grants

- NSF Grant DMS-2308208, PI, 2023-2026, $360,000.
- NSF Grant DMS-2009422, PI, 2020-2023, $199,989.
- NSF Grant DMS-1815069, PI, 2018-2021, $188,828.
- NSF Conference Grant DMS-1800839, Co-PI, 2018-2023, $48,000.
- Simons Collaboration Grant in Mathematics, 2023-2028, $42,000.
- Simons Collaboration Grant in Mathematics, 2018-2023, $42,000.
- AWM-NSF Mentor Travel Award (Mentor: Eduard Feireisl), 2018-2019, $5,000.

Honors & Awards

- AMS Centennial Fellowship, American Mathematical Society, 2022-2023.
- Ladyzhenskaya Lecturer, Leipzig, Committee for Women in Mathematics, International Mathematical Union, 2022.
- von Neumann Fellowship, Institute for Advanced Study, Princeton, 2021-2022.

Ph. D Students

Han Liu, *University of Illinois at Chicago*, Graduated in 2020, Current position: postdoc at NYU Abu Dhabi.
Thesis title: On the well-posedness and long time behavior of the Hall-magnetohydrodynamics system

Margaret Hoeller, *University of Illinois at Chicago*, Started date: Summer 2020.

Qirui Peng, *University of Illinois at Chicago*, Started date: Summer 2021.

Chao Wu, *University of Illinois at Chicago*, Started date: Summer 2022.

Undergraduate Students Supervised

Jasmine Otto, *University of Illinois at Chicago*, 2015-2016, Independent study.

Kevin Mazzarella, *University of Illinois at Chicago*, Fall 2018, Independent Study.

Chaitali Naik, *University of Illinois at Chicago*, Spring 2019, Independent Study.

Shekhar Mukesh, *University of Illinois at Chicago*, Summer 2019, Fall 2019, Independent Study.

Benjamin Farrell, *University of Illinois at Chicago*, Fall 2019, Independent Study.

Jacob Krol, *University of Illinois at Chicago*, Fall 2019, Mathematical Computing Laboratory Project.

Le Rayah Neely-Brown, *University of Illinois at Chicago*, Fall 2019, Mathematical Computing Laboratory Project.

Bhakti Vyas, *University of Illinois at Chicago*, Fall 2019, Mathematical Computing Laboratory Project & Independent Study.

Patricia Wilk, *University of Illinois at Chicago*, Fall 2019, Mathematical Computing Laboratory Project.

First-year Students Mentored

Ayman Hussein, *University of Illinois at Chicago.*

Jack Arbunich, *University of Illinois at Chicago.*

Marieme Ngom, *University of Illinois at Chicago.*

Publications

Preprints:

47. **M. Dai and S. Friedlander.** *Non-uniqueness of forced active scalar equations with even drift operators.* arXiv:2311.06064, 2023.
46. **M. Dai and Q. Peng.** *Non-unique weak solutions of forced SQG.* arXiv:2310.13537, 2023.
45. **M. Dai.** *Global existence of 2D electron MHD near a steady state.* arXiv:2306.13036, 2023.
44. **M. Dai, C. Ouyang and Q. Peng.** *Uniqueness for a stochastic ideal dyadic MHD model.* arXiv:2306.10909, 2023.
43. **M. Dai and Q. Peng.** *Non-unique stationary solutions of forced SQG.* arXiv:2302.03283, 2023.
42. **M. Dai.** *Reduced models for electron magnetohydrodynamics: well-posedness and singularity formation.* arXiv:2204.01951, 2022.
41. **M. Dai.** *Almost sure well-posedness for Hall MHD.* arXiv:2202.04265, 2022.
40. **A. Cheskidov and M. Dai.** *The number of degrees of freedom for the 2D Navier-Stokes equation: a connection with Kraichnan's theory of turbulence.* arXiv:2112.11606, 2021.
39. **M. Dai, M. Hoeller, Q. Peng and X. Zhang.** *Kolmogorov's dissipation number and determining wavenumber for dyadic models.* arXiv:2108.12913, 2021.

Peer Reviewed Articles:

38. **M. Dai and C. Wu.** *Dissipation wavenumber and regularity for electron magnetohydrodynamics.* Journal of Differential Equations, Vol. 376: 655–681, 2023.

37. **M. Dai.** *Almost sure existence of global weak solutions for supercritical electron MHD.* Discrete and Continuous Dynamical Systems Series B, doi:10.3934/dcdsb.2023146, 2023.

36. **M. Dai, B. Vyas and X. Zhang.** *1D model for the 3D magnetohydrodynamics.* Journal of Nonlinear Science, doi.org/10.1007/s00332-023-09944-8, 2023.

35. **A. Cheskidov, M. Dai and S. Friedlander.** *Dyadic models for fluid equations: a survey.* Journal of Mathematical Fluid Mechanics, Vol.25, 62, 2023.

34. **M. Dai.** *Blow-up of dyadic MHD models with forward energy cascade.* International Mathematics Research Notices, https://doi.org/10.1093/imrn/rnac337, 2022.

33. **M. Dai and S. Friedlander.** *Uniqueness and non-uniqueness results for dyadic MHD models.* Journal of Nonlinear Science, https://doi.org/10.1007/s00332-022-09868-9, 2022.

32. **M. Dai and H. Liu.** *On well-posedness of generalized Hall-magnetohydrodynamics.* Zeitschrift für angewandte Mathematik und Physik, 73:139, 2022.

31. **M. Dai, J. Krol and H. Liu.** *On uniqueness and helicity conservation of weak solutions to the electron-MHD system.* Journal of Mathematical Fluid Mechanics, 24:69, 2022.

30. **M. Dai and S. Friedlander.** *Dyadic models for ideal MHD.* Journal of Mathematical Fluid Mechanics. DOI:10.1007/s00021-021-00640-9, 2021.

29. **M. Dai.** *Blow-up of a dyadic model with intermittency dependence for the Hall MHD.* Physica D: Nonlinear Phenomena. DOI: 10.1016/j.physd.2021.133066.

28. **M. Dai.** *Phenomenologies of intermittent Hall MHD turbulence.* DCDS-Series B. DOI: 10.3934/dcdsb.2021285, 2021.

27. **M. Dai.** *Non-uniqueness of weak solutions in Leray-Hopf space for the 3D Hall-MHD system.* SIAM Journal of Mathematical Analysis, 53(5): 5979–6016, 2021.

26. **M. Dai.** *Local well-posedness for the Hall-MHD system in optimal Sobolev spaces.* Journal of Differential Equations, Vol. 289: 159–181, 2021.

25. **A. Cheskidov and M. Dai.** *Discontinuity of weak solutions to the 3D NSE and MHD equations in critical and supercritical spaces.* Journal of Mathematical Analysis and Applications, Vol. 481 (2), 123493, 2020. https://doi.org/10.1016/j.jmaa.2019.123493.

24. **M. Dai and H. Liu.** *Low modes regularity criterion for a chemotaxis-Navier-Stokes system.* Communications on Pure and Applied Analysis, Vol. 19(5): 2713–2735, 2020. DOI: 10.3934/cpaa.2020118.

23. **M. Dai and H. Liu.** *Application of harmonic analysis techniques to regularity problems of dissipative equations.* Contemporary Mathematics, AMS, Vol. 748: 35–56, https://doi.org/10.1090/conm/748/15051, 2020.

22. **A. Cheskidov and M. Dai.** *On the determining wavenumber for the nonautonomous subcritical SQG equation.* Journal of Dynamics and Differential Equations. DOI: 10.1007/s10884-019-09794-7, 2019.

21. **A. Cheskidov and M. Dai.** *Regularity criteria for the 3D Navier-Stokes and MHD equations.* arXiv:1507.06611, 2015. To appear in Proceedings of the Edinburgh Mathematical Society.

20. **M. Dai and H. Liu.** *Long time behavior of solutions to the 3D Hall-magneto-hydrodynamics system with one diffusion.* Journal of Differential Equations, Vol. 266: 7658–7677, 2019.

19. **A. Cheskidov and M. Dai.** *Kolmogorov's dissipation number and the number of degrees of freedom for the 3D Navier-Stokes equations.* Proceedings of the Royal Society of Edinburg, Section A, Vol. 149, Issue 2: 429–446, 2019.

18. **A. Cheskidov, M. Dai and L. Kavlie.** *Determining modes for the 3D Navier-Stokes equations.* Physica D: Nonlinear Phenomena, Vol.374–375:1–9, 2018.

17. **M. Dai.** *Local well-posedness of the Hall-MHD system in $H^s(\mathbb{R}^n)$ with $s > \frac{n}{2}$.* Mathematische Nachrichten. DOI: 10.1002/mana.201800107, 2018.

16. **A. Cheskidov and M. Dai.** *Determining modes for the surface quasi-geostrophic equation.* Physica D: Nonlinear Phenomena, https://doi.org/10.1016/j.physd.2018.03.003.

15. **M. Dai.** *Regularity criterion and energy conservation for the supercritical quasi-geostrophic equation.* Journal of Mathematical Fluid Mechanics, DOI:10.1007/s00021-017-0320-y, 2017.
14. **M. Dai, E. Feireisl, E. Rocca, G. Schimperna, and M. E. Schonbek.** *Analysis of a diffuse interface model of multispecies tumor growth.* Nonlinearity, Vol. 30: 1639–1658, 2017.
13. **M. Dai.** *Regularity problem for the nematic LCD system with Q-tensor in* $\mathbb{R}^3$. SIAM Journal on Mathematical Analysis, Vol. 49(6): 5007–5030, 2017.
12. **J. Bona and M. Dai.** *Norm-inflation results for the BBM equation.* Journal of Mathematical Analysis and Applications, Vol. 446: 879–885, 2017.
11. **A. Cheskidov and M. Dai.** *The existence of a global attractor for the forced critical surface quasi-geostrophic equation in* L^2. Journal of Mathematical Fluid Mechanics, DOI: 10.1007/s00021-017-0324-7, 2017.
10. **M. Dai, E. Feireisl, E. Rocca, G. Schimperna, and M. E. Schonbek.** *On asymptotic isotropy for a hydrodynamic model of liquid crystals.* Asymptotic Analysis 97 (3-4): 189–210, 2016.
9. **M. Dai.** *Regularity criterion for the 3D Hall-magneto-hydrodynamics.* Journal of Differential Equations, 261: 573–591, 2016.
8. **M. Dai.** *Stability of solutions to the dissipative quasi-geostrophic equations.* Nonlinearity, 28: 4227–4248, 2015.
7. **A. Cheskidov and M. Dai.** *Norm inflation for generalized Magneto-hydrodynamic system.* Nonlinearity, 28: 129–142, 2015.
6. **M. Dai.** *Existence of regular solutions to an Ericksen-Leslie model of liquid crystal system.* Communications in Mathematical Sciences, Vol. 13 (7): 1711–1740, 2014.
5. **M. Dai and M. E. Schonbek.** *Asymptotic behavior of solutions to the liquid crystal systems in* $H^m(\mathbb{R}^3)$. SIAM Journal on Mathematical Analysis. Vol. 46, No. 5:3131–3150, 2014.
4. **A. Cheskidov and M. Dai.** *Norm inflation for generalized Navier-Stokes equations.* Indiana University Mathematics Journal, Vol. 63, No. 3 : 869–884, 2014.
3. **M. Dai, J. Qing and M. E. Schonbek.** *Asymptotic behavior of solutions to liquid crystal systems in* $\mathbb{R}^3$. Communications in Partial Differential Equations. Vol. 37, No. 12: 2138–2164, 2012.
2. **M. Dai, J. Qing and M. E. Schonbek.** *Regularity of solutions to the liquid crystals systems in* $\mathbb{R}^2$ *and* $\mathbb{R}^3$. Nonlinearity, 25: 513–532, 2012.
1. **M. Dai, J. Qing and M. E. Schonbek.** *Norm inflation for incompressible Magneto-hydrodynamic system in* $\dot{B}_{\infty}^{-1,\infty}$. Advances in Differential Equations, Vol. 16, No. 7-8: 725–746, 2011.

Invited Presentations

- **Plenary Speaker** at 2018 International Congress of Mathematics Satellite Event-Workshop for Women in Differential Equations at Sao Paulo, Brazil, July 25-27, 2018.

(Colloquia and Seminar)

- Seminar talk at National Center for Theoretical Sciences, National Taiwan University, Taipei, August 17, 2023.
- Seminar talk at Technische Universität Darmstadt, Darmstadt, Germany, July 4, 2023.
- Seminar talk at University of Kassel, Kassel, Germany, July 3, 2023.
- Seminar talk at University of California at Santa Cruz, Santa Cruz, May 17, 2023.
- Seminar talk at Stony Brook University, Stony Brook, April 21, 2023.
- Seminar talk at Palermo University, Palermo, Italy, April 11, 2023.
- Seminar talk at University of Southern California, Los Angeles, March 20, 2023.
- Seminar talk at University of Chicago, Chicago, February 20, 2023.

- Seminar talk at Rutgers University, New Brunswick, January 24, 2023.
- Noetherian Ring Seminar talk at Princeton University, Princeton, December 1, 2022.
- Seminar talk at the Newton Institute, University of Cambridge, Cambridge, November 22, 2022.
- Seminar talk at Texas Tech University, Lubbock, October 24, 2022.
- Seminar talk at the University of Connecticut, Storrs, October 3, 2022.
- Ladyzhenskaya Lecture at the Max-Planck Institut, Leipzig, October 12, 2022.
- Mini-course series at Leipzig University, Leipzig, September 22-October 10, 2022.
- Seminar talk at the Max-Planck Institut, Leipzig, September 20, 2022.
- Seminar talk at the ICMAT, Madrid, July 14, 2022.
- Seminar talk at the Institute for Advanced Study, Princeton, June 13, 2022.
- Seminar talk at Pittsburgh University, Pittsburgh, June 10, 2022.
- Seminar talk at Shanghai Jiaotong University, Online, May 31, 2022.
- Seminar talk at the Institute for Advanced Study, Princeton, April 19, 2022.
- Seminar talk at Princeton University, Princeton, March 3, 2022.
- Colloquium talk at Oregon State University, Corvallis, January 10, 2022.
- Seminar talk at Temple University, Philadelphia, December 6, 2021.
- Colloquium talk at The Institute for Advanced Study, Princeton, November 29, 2021.
- Seminar talk at The University of Southern California, Los Angeles, January 22, 2021.
- Seminar talk at The City University of New York, New York, February 13, 2020.
- Seminar talk at University of Wisconsin-Madison, Madison, January 29, 2020.
- Seminar talk at University of Michigan, Ann Arbor, April 12, 2019.
- Colloquium talk at HongKong University of Science and Technology, HongKong, February 21, 2019.
- Seminar talk at The University of Southern California, January 29, 2019.
- Colloquium talk at Southern University of Science and Technology, Shenzhen, China, January 6, 2019.
- Seminar talk at Purdue University, West Lafayette, October 29, 2018.
- Seminar talk at University of Chicago, May 9, 2018.
- Seminar talk at University of California, Santa Barbara, April 13, 2018.
- Colloquium talk at University of California, Santa Cruz, April 9, 2018.
- Seminar talk at Illinois Institute of Technology, March 8, 2018.
- Seminar talk at Princeton University, November 16, 2017.
- Colloquium talk at University of Illinois at Chicago, February 5, 2016.
- Colloquium talk at University of Nebraska-Lincoln, January 25, 2016.
- Colloquium talk at University of Miami, January 14, 2016.
- Colloquium talk at University of Virginia, December 2, 2015.
- Colloquium talk at Iowa State University, January 29, 2015.
- Seminar talk at University of Pittsburgh, November 16, 2015.
- Seminar talk at Indiana University at Bloomington, October 26, 2015.
- Seminar talk at Penn State University, September 17, 2014.
- Seminar talk at University of Illinois at Urbana-Champaign, January 31, 2013.
- Seminar talk at University of California at Merced, March 9, 2012.

(Conference lectures)

- Workshop on "Recent Advances in Fluid Dynamics: Singularity, Regularity and Mixing" at Duke Kunshan University (DKU), Kunshan, December 11-15, 2023.

- Workshop on “Small Scale Dynamics in Incompressible Fluid Flows” at American Institute of Mathematics (AIM), Pasadena, California, November 6-10, 2023.
- Mini-symposium on “Wild Behavior in Fluid Dynamics” at the SIAM Great Lakes Section Conference, Michigan State University, Michigan, October 13-14, 2023.
- Workshop on “Fluid Equations, A Paradigm for Complexity: Regularity vs Blow-up, Deterministic vs Stochastic” at Banff International Research Station (BIRS), Banff, Canada, October 1-6, 2023.
- AWM Research Symposium on “Recent Developments in Control, Optimization, and the Analysis of Partial Differential Equations” at Clark Atlanta University, Atlanta, September 30-October 2, 2023.
- Mini-symposium on “Recent Advances on Regularity and Irregularity of Fluids Flows” at the 10th International Congress on Industrial and Applied Mathematics (ICIAM), Tokyo, August 20-25, 2023.
- Workshop on “Partial Differential Equations in Fluid Dynamics” at Banff International Research Station (BIRS), IASM, Hangzhou, August 6-11, 2023.
- Special Session on “Recent Trends in Navier-Stokes Equations, Euler Equations, and Related Problems" at the 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications at Wilmington, North Carolina, May 31- June 4, 2023.
- Special session on “Stochastic Analysis” at AMS Spring Southeastern Sectional Meeting, Atlanta, March 17-19, 2023.
- Workshop on “Analysis of fluid dynamical PDEs” at RIMS, Kyoto, Japan, March 13-15, 2023.
- Special Session on “Recent Developments in the Analysis of Local and Nonlocal PDEs” at the AMS JMM, Boston, January 3-7, 2023.
- Special Session on “Recent Advances in the Theory of Fluid Dynamics” at the AMS Fall Western Sectional Meeting, Salt Lake City, October 22-23, 2022.
- Conference on “Fluids and turbulence”, Institut Camille Jordan, Lyon, France, June 27-July1, 2022.
- AWM Research Symposium “Deterministic and probabilistic approaches for nonlinear PDEs", University of Minnesota, June 16-19, 2022.
- Special Session “Nonlinear Partial Differential Equations from Variational Problems and Complex Fluids" at AMS Sectional Meeting, Purdue University (Online), March 26-27, 2022.
- Conference on “Rigorous analysis of incompressible fluid models and turbulence”, Isaac Newton Institute, Cambridge, February 14-18, 2022.
- V Workshop on Fluids and PDE, Universidade Estadual de Campinas (Online), September 20-October 1, 2021.
- SITE Conference “Long time behaviour and singularity formation in PDEs", Online, June 13-17, 2021.
- Mini-symposium “Mathematics of fluids: analysis and computations" at the SIAM Conference on Applications of Dynamical Systems, Online, May 23-27, 2021.
- Mini-symposium “Recent analytical and numerical developments on fluid and solid mechanics: inhomogeneous fluids, geophysical phenomena, complex fluids and materials" at the SIAM Conference on Mathematical Aspects of Materials Science, Online, May 17-28, 2021.
- Special Session “Geophysical Fluid Dynamics, Turbulence, and Data Assimilation: A Rigorous and Computational Study" at AMS Joint Mathematics Meeting, Online, January 5-7, 2021.
- The PDE Workshop at Northwestern University of China, Online, July 28-29, 2020.
- Special Session “Nonlinear Partial Differential Equations from Variational Problems and Fluid Equations" at AMS Spring Central Sectional Meeting at Purdue University, West Lafayette, April 4-5, 2020.
- Special Session “Analysis of PDE in Fluid Dynamics" at AMS Spring Central Sectional Meeting at Purdue University, West Lafayette, April 4-5, 2020.
- Mini-symposium “Recent developments on analysis and computations in fluid dynamics" at the SIAM Conference on Analysis of PDEs, La Quinta, December 11-14, 2019.

- Mini-symposium “Recent progress in Fluid Mechanics: classical flows, geophysical models and complex fluids" at the SIAM Conference on Analysis of PDEs, La Quinta, December 11-14, 2019.
- Special Session “Nonlinear PDEs in Fluid Dynamics" at AMS Sectional Meeting at the University of Florida, Gainesville, November 2-3, 2019.
- The 84th Midwest PDE Seminar at Illinois Institute of Technology, Chicago, October 26-27, 2019.
- Special Session “Nonlinear Dispersive Equations and Water Waves" at AMS Sectional Meeting at the University of Wisconsin-Madison, September 14-15, 2019.
- Workshop on “Convex Integration in PDEs, Geometry, and Variational Calculus” at Banff International Research Station (BIRS), Canada, August 11-16, 2019.
- Workshop on “Nonlinear PDEs and fluids", Prague, July 8-11, 2019.
- “International Conference on Nonlinear PDEs in Fluid Dynamics", Beijing Normal University, Beijing, July 3-5, 2019.
- The Eleventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, University of Georgia, Athens, April 17-19, 2019.
- Special Session “Stability and Singularity in Fluid Dynamics" at AMS Sectional Meeting at the University of Hawaii, Honolulu, March 22-24, 2019.
- Special Session “Advances in Mathematical Fluid Mechanics" at AMS Sectional Meeting at the University of Hawaii, Honolulu, March 22-24, 2019.
- Special Session “Nonlocality in Models for Kinetic, Chemical, and Population Dynamics" at AMS Sectional Meeting at the University of Michigan, Ann Arbor, October 20-21, 2018.
- Workshop on “Regularity and Blow-up of Navier-Stokes Type PDEs using Harmonic and Stochastic Analysis” at Banff International Research Station (BIRS), Canada, August 19-24, 2018.
- The 12th AIMS Conference on Dynamical Systems and Differential Equations and Applications at Taipei, July 5-9, 2018.
- Special Session “Nonlinear and Stochastic Partial Differential Equations and Applications" at AMS Sectional Meeting at Northeastern University, Boston, April 21-22, 2018.
- Special Session “Evolution Equations and Applications" at AMS Sectional Meeting at Vanderbilt University in Nashville, TN, April 14-15, 2018.
- The SIAM Conference on Analysis of Partial Differential Equations at Baltimore, Maryland, December 9-12, 2017.
- Midwest Partial Differential Equations Workshop at University of Illinois at Chicago, Chicago, September 14-17, 2017.
- The Mathematical Congress of the Americas 2017 in Session “Equations of Fluid Mechanics: Analysis” at Montreal, Canada, July 24-28, 2017.
- The Workshop on “Essence of the convection term: reflections on mathematical fluid dynamics" at the University of Virginia, May 13-15, 2017.
- The10th IMACS International Conference on “Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory” at Athens, Georgia, March 29-April 01, 2017.
- The 11th AIMS Conference on Dynamical Systems and Differential Equations and Applications at Orlando, July 1-5, 2016.
- “PDE Analysis in Fluid Flows" at AMS sectional meeting at University of Georgia, Athens, March 5-6, 2016.
- “Equations of Fluid Motion" at AMS annual meeting at Seattle, January 6-9, 2016.
- The SIAM Conference on Analysis of Partial Differential Equations at Scottsdale, Arizona, December 7-10, 2015.
- Special Session “Nonlinear Evolutionary Equations" at Canadian Mathematical Society Winter Meeting at Montreal, Canada, December 4-7, 2015.
- “ Fluid Dynamics" at EQUADIFF 2015, Lyon, France, July 4-11, 2015.

- "Partial Differential Equations Related to Fluids" at AMS sectional meeting at University of North Carolina at Greensboro, November 8-9, 2014.
- "Hamiltonian Partial Differential Equations" at AMS sectional meeting at San Francisco State University, October 25-26, 2014.
- 74th Midwest Partial Differential Equations Seminar at University of Illinois at Urbana Champaign, October 18-19, 2014.
- Southeastern-Atlantic Regional Conference on Differential Equations (SEARCDE) at University of Memphis, October 11-12, 2014.
- Session "Nonlinear Elliptic Partial Differential Equations and Systems" at the 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications in Madrid, Spain, July 7-11, 2014.
- The Fourth Workshop on Fluids and PDE at IMPA, Rio de Janeiro, Brazil, May 26-30, 2014.
- The International Conference: Two Days Workshop on Liquid Crystal-flows, IMATI, CNR, Pavia, March 24-25, 2014.
- 72nd Midwest Partial Differential Equations Seminar at Purdue University, November 16-17, 2013.
- "Mathematical Analysis of Complex Fluids and Flows" at AMS sectional meeting at University of Louisville, October 5-6, 2013.
- "Regularity Problems for Nonlinear Partial Differential Equations Modeling Fluids and Complex Fluids" at the workshop of the Mathematics Research Communities in Snowbird Resort, June 25-July 1, 2013.
- Session "Analysis of PDEs in Newtonian and Non-Newtonian Fluid Mechanics" at AWM Research Symposium 2013, Santa Clara University, March 16-17, 2013.
- "Mathematical Fluid Dynamics and its Application in Geosciences" at AMS Sectional meeting at University of Arizona, October 27-28, 2012.
- Session "The Navier-Stokes Equations and Related Problems" and "Infinite Dimensional Dynamics and Applications" at the 9th AIMS Conference on Dynamical Systems, Differential Equations and Applications at Orlando, July 1- 5, 2012.
- Session "Nonlinear Partial Differential Equations of Fluid and Gas Dynamics" at AMS Spring Sectional meeting at University of Hawaii at Manoa, March 3-4, 2012.
- Session "Some Nonlinear Partial Differential Equations" at AMS annual meeting in Boston, January 4-7, 2012.
- Session "Analysis Issues in the Study of Liquid Crystals and Related Areas" at SIAM conference on Analysis of PDEs in San Diego, November 14-17, 2011.
- Session "The Many Aspects of Fluids and Harmonic Analysis" at SIAM conference on Analysis of Partial Differential Equations in San Diego, November 14-17, 2011.
- The Third Oklahoma Partial Differential Equations Workshop at Oklahoma State University, November 12-13, 2011.

Teaching Experience

Teaching at University of Illinois at Chicago

- Calculus III Math 210, Spring 2021
- Applied Math Models Math 419, Fall 2020
- Advanced Calculus Math 410, Fall 2020
- Ordinary Differential Equations Math 585, Fall 2019
- Calculus III Math 210, Fall 2019
- Partial Differential Equations for graduate students Math 576, Spring 2019
- Partial Differential Equations for graduate students Math 480, Fall 2018
- Calculus III Math 210, Fall 2018
- Partial Differential Equations for graduate students Math 480, Fall 2017
- Calculus III Math 210, Fall 2017

- Differential equations Math 220, Fall 2016
- Applied Math Models Math 419, Spring 2016
- Partial Differential Equations for graduate students Math 480, Fall 2015
- Calculus III Math 210, Fall 2015
- Partial Differential Equations for graduate students Math 576, Spring 2015
- Applied Math Models Math 419, Fall 2014
- Calculus III Math 210, Fall 2014
- Calculus I Math 180, Spring 2014
- Differential Equations Math 220, Fall 2013
- Calculus I Math 180, Fall 2013

Teaching at University of Colorado Boulder

- Differential Equations, Spring 2013
- Calculus II for Engineers, Spring 2013
- Calculus II for Engineers, Fall 2012
- Calculus I with Algebra, Fall 2012

Organizing Activity

- MSRI Summer School on Recent Topics in Well Posedness, University of Hawaii, Hilo, July 18-29, 2022.
- Workshop on Criticality and Stochasticity in Quasilinear Fluid Systems at the American Institute of Mathematics, San Jose, May 2-6, 2022.
- Graduate Research Opportunities for Women (GROW) Conference, University of Illinois at Chicago, October, 2021.
- Workshop on Criticality and Stochasticity in Quasilinear Fluid Systems at the American Institute of Mathematics, San Jose, April 5-9, 2021.
- Graduate Research Opportunities for Women (GROW) Conference, University of Chicago, October 23-25, 2020.
- Workshop of Women in Analysis and PDEs at UIC, Chicago, April 6-7, 2019.
- Workshop on Recent Developments in Nonlinear Waves at UIC, Chicago, November 9-11, 2018.
- Special session on “Mathematical Analysis of Nonlinear Phenomena" at the AMS Sectional Meeting at University of Hawaii, Honolulu, March 22-24, 2019.
- Special session on “Recent Developments in Mathematical Analysis of Some Nonlinear Partial Differential Equations" at the AMS Sectional Meeting at University of Michigan, Ann Arbor, October 21-22, 2018.
- Special session on “Mathematical analysis in incompressible fluid dynamics" at SIAM Conference: Analysis of Partial Differential Equations, Baltimore, Maryland, December 9-12, 2017.
- Mini-symposium on “Analysis of partial differential equations" at the Third Annual Midwest Women in Mathematics Symposium, Dominican University, Chicago, March 7, 2015.
- Special session on “Analysis of partial differential equations and fluid dynamics" at the Fall Central AMS sectional meeting at Loyola University, Chicago, October 3-4, 2015.
- Special session on “Analysis of dynamics of the incompressible fluids" at the Spring Western AMS sectional meeting at University of Colorado Boulder, April 13-14, 2013.
- Special session on “Analysis of nonlinear differential equations arising in fluid dynamics" at SIAM Conference: Analysis of Partial Differential Equations, Orlando, Florida, December 7-10, 2013.

Service to Profession: Grants Review

- Reviewer for grant proposals for the Proof of Concept Awards Program at UIC, 2022
- Reviewer for grant proposals for the Collaboration Grants for Mathematicians program of Simons Foundation, 2019, 2020, 2021
- Reviewer for Research in Groups Program for the International Centre for Mathematical Sciences (ICMS) in Edinburgh UK, 2020

Service to Profession: Referee for Journals

- Referee for Journals: Communications on Pure and Applied Mathematics, Archive for Rational Mechanics and Analysis, SIAM Journal on Mathematical Analysis, Nonlinearity, Journal of Differential Equations, AIMS Mathematics, Discrete and Continuous Dynamical Systems-Series B, Physica D: Nonlinear Phenomena, Mathematical Biosciences and Engineering, Applied Mathematics Letters, Journal of Mathematical Fluid Mechanics, Journal of Mathematical Analysis and Applications, Revista Matemática Iberoamericana, Applied Mathematics and Computation, Boundary Value Problems, Zeitschrift für angewandte Mathematik und Physik, Nonlinear Analysis, Mathematical Methods in the Applied Sciences, Communications on Pure and Applied Analysis, Communications in Mathematical Physics, Pacific Journal of Mathematics, Annals of Partial Differential Equations, Journal of Functional Analysis.

Service to the Department/University/Students

- UIC MSCS Diversity, Equity and Inclusion Committee Member, 2022-2023
- UIC Senator, 2020-2023
- Tenure-track Hiring Committee Member, 2018, 2019
- LAS Elections Committee Member, 2017-2020
- Colloquium Organizer at UIC, 2016-2018
- Organizer of Analysis and Applied Mathematics Seminar at UIC, 2016-present
- Graduate Students Admission Committee Member at UIC, 2016-2018
- Committee Member of Thesis Defense of Milica Vesovic, Jack Arbunich, Marieme Ngom, Xin Tong, Xiaoyutao Luo