

Curriculum Vitae

Xukai Yan

Contact Information:

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Education:

PhD in Mathematics, Rutgers University, 2017.

B.S. in Mathematics and Applied Mathematics, University of Science and Technology of China, 2010.

Employment history:

Assistant Professor, Oklahoma State University, 2020-present.

Hale Assistant Professor, Georgia Institute of Technology, 2017-2020.

Research Interests: Nonlinear partial differential equations and applications, theoretical research on fluid equations, nonlinear analysis.

Grants and Awards:

Simons Foundation Collaboration Grant for Mathematicians 962527, 2022-2027, (PI) \$42,000.

National Science Foundation Grant DMS-2224003, for the organization of the 7th SIAM Central States Section Annual Meeting, 2022-2023, (Co-PI) \$20,000. (PI: Xu Zhang).

AMS-Simons Travel Grant, 2018-2023, (PI) \$4,000.

AWM-NSF Travel Grant 1642548, 2018, (PI) \$2,840.

Publications:

Articles Published in Peer-Reviewed Journals:

(The names of authors are ordered alphabetically according to the last names.)

L. Li, Y. Y. Li and X. Yan, Homogeneous solutions of stationary Navier-Stokes equations with isolated singularities on the unit sphere. I. One singularity, *Arch. Ration. Mech. Anal.* 227 (2018), 1091-1163.

L. Li, Y. Y. Li and X. Yan, Homogeneous solutions of stationary Navier-Stokes equations with isolated singularities on the unit sphere. II. Classification of axisymmetric no-swirl solutions, *Journal of Differential Equations* 264 (2018), 6082-6108.

L. Li, Y. Y. Li and X. Yan, Vanishing viscosity limit for homogeneous axisymmetric no-swirl solutions of stationary Navier-Stokes equations, *Journal of Functional Analysis* 227 (2019), 3599-3652.

L. Li, Y. Y. Li and X. Yan, Homogeneous solutions of stationary Navier-Stokes equations with isolated singularities on the unit sphere. III. Two Singularities, *Discrete and Continuous Dynamical Systems - Series A*, 39 (2019), 7163-7211.

Y. Y. Li, X. Yan and Y. Yao, Symmetry of hypersurfaces with ordered mean curvature in one direction, *Calc. Var. PDE.* 60, 173 (2021).

Y. Y. Li and X. Yan, Asymptotic stability of homogeneous solutions of incompressible stationary Navier-Stokes equations, *Journal of Differential Equations* 297 (2021), 226-245.

M. G. Delgadino, X. Yan and Y. Yao, Uniqueness and nonuniqueness of steady states of aggregation-diffusion equations, *Comm. Pure Appl. Math.* 75 (2022), 3-59.

X. Yan and Y. Yao, Sharp stability for the interaction energy, *Arch. Ration. Mech. Anal.* (2022) available online (<https://doi.org/10.1007/s00205-022-01823-y>), arXiv:2008.07502 [math.AP].

Articles Submitted to Peer-Reviewed Journals:

Y. Y. Li and X. Yan, Anisotropic Caffarelli-Kohn-Nirenberg type inequalities, submitted, arXiv:2112.00217 [math.AP].

Invited talks:

The 7th SIAM Central States Section Annual Meeting, Mini-Symposium 04: Analysis and applications of PDEs modeling fluids, Oklahoma State University, October 1-2, 2022.

PDE and Analysis Seminar, Chinese Academy of Science, September 22, 2022.

Analysis Seminar, Oregon State University, February 28, 2022.

Applied Math Seminar, Oklahoma State University, August 24, August 31, October 12, 2021.

Analysis Seminar, Oklahoma University, October 4, 2021.

Yongjiang Math Seminar, Ningbo University, September 30, 2021.

Analysis, Physics, Logic Seminar, Virginia Commonwealth University, February 26, 2021.

Special Workshop in Fluid PDEs, Webinar on Analysis and PDEs online group, November 21, 2020.

Applied Math Seminar, Oklahoma State University, August 27, September 3, September 10, 2020.

SIAM Conference on Analysis of Partial Differential Equations (PD19), Special Session MS40: Mathematical Aspects of Several Topics Arising from Material Science, La Quinta, California, December 11-14, 2019.

AMS Fall Southeastern Sectional Meeting, Special Session: Analysis of Geometric and Evolutionary Partial Differential Equations, University of Florida, Gainesville, Florida, November 2-3, 2019.

SIAM SEAS 2019 Annual Meeting, Special Session: Recent Development in Nonlocal PDEs in Fluids and Other Applications, University of Tennessee-Knoxville, September 20-22, 2019.

The 1st Annual Meeting of SIAM Texas-Louisiana Section, Mini Symposium: Nonlinear Conservation Laws and Applications, Louisiana State University, October 5-7, 2018.

The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Special Session SS83: Recent Advances in the Analysis of Nonlinear Phenomena, Taipei, Taiwan, July 5-9, 2018.

The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Special Session SS140: Classical and Geophysical Fluid Dynamics: Modeling, Analysis and Reduction, Taipei, Taiwan, July 5-9, 2018.

SIAM APDE 2017, Special Session: Recent Development of the Mathematical Theory in Complex Fluids, Baltimore, Maryland, December 11, 2017.

PDE Seminar, Georgia Institute of Technology, March 28, 2017.

Seminar on Pure Math, Hong Kong University of Science and Technology, January 9, 2017.

Complex Fluids Seminar, Pennsylvania State University, December 6, 2016.

PDE/Applied Math Seminar, Indiana University Bloomington, November 14, 2016.

Nonlinear Analysis Seminar, Rutgers University, November 8, 2016.

AMS Fall Central Sectional Meeting, Special Session: Mathematics and Physics of Tornado Modeling, Minneapolis, Minnesota, October 29, 2016.

PDE Seminar, Brown University, September 23, 2016.

The 14th Nonlinear PDE Summer School and Conference, Harbin, China, July 13, 2016.

Teaching Experience:

Introduction to Optimization (MATH 4553/5503), Oklahoma State University, Spring 2022.

Introduction to Partial Differential Equations (MATH 4263/5263), Oklahoma State University, Spring 2021.

Differential Equations (MATH 2233), Oklahoma State University, Fall 2020, Fall 2021, Fall 2022.

Integral Calculus, Georgia Institute of Technology, Fall 2019.

Multivariable Calculus, Georgia Institute of Technology, Spring 2019 and Spring 2020.

Differential Calculus, Georgia Institute of Technology, Fall 2018 and Fall 2017.

Introduction to Linear Algebra, Georgia Institute of Technology, Spring 2018.

Elementary Differential Equations, Rutgers University, Summer 2014.

Service:

- **Conference organized:**

The 7th SIAM Central States Section Annual Meeting, Oklahoma State University, Stillwater, OK, October 1-2, 2022 (co-organized with Xu Zhang).

- **Mini-Symposium organized:**

Mini-Symposium “Analysis and applications of PDEs modeling fluids,” the 7th SIAM Central States Section Annual Meeting, Oklahoma State University, Stillwater, OK, October 1-2, 2022 (co-organized with Jiahong Wu).

- **Seminar Series Organized:**

PDE Seminar of Georgia Institute of Technology, 2018-2020 (co-organized with Ronghua Pan and Yao Yao).

The Applied Math Seminar at Oklahoma State University, Fall 2021.

- **Professional Leadership:**

Secretary of Society for Industrial and Applied Mathematics Central State Section, 2022-2023 term.

- **Reviewer for the following journals:** *Journal of Nonlinear Science, Communications in Mathematics and Statistics, Calculus of Variations and Partial Differential Equations, the Analysis in Theory and Applications, Dynamics of Partial Differential Equations, Communication in Contemporary Mathematics, Discrete and Continuous Dynamical Systems Series S, Communications on Pure and Applied Analysis, International Mathematics Research Notices, Mathematics and Statistics.*