Jincheng Yang

Curriculum Vitae

Appointments

2025– **Assistant Professor**, *Johns Hopkins University*, Baltimore, MD

2024–2025 **Member**, *Institute for Advanced Study*, Princeton, NJ

2022–2024 **L.E. Dickson Instructor**, *University of Chicago*, Chicago, IL

2017 **Visiting Scholar**, *Georgia Institute of Technology*, Atlanta, GA

Education

2017–2022 **Ph.D. in Mathematics**, *The University of Texas at Austin*, Austin, TX
Advisor: Luis Caffarelli and Alexis Vasseur

2013–2017 **B.Sc. in Mathematics and Applied Mathematics** (Honors Program), *Xi'an Jiaotong University*, China

2011–2013 **Special Class for the Gifted Young**, *Xi'an Jiaotong University*, China

Research Interests

APDE **Analysis and Partial Differential Equations**, *dynamical systems, fluid dynamics, kinetic theory*
Euler equation, Navier–Stokes equation, Boltzmann equation, Fokker–Planck equation.

MSOR **Management Science and Operation Research**, *distributionally robust optimization, optimal mass transportation, risk measure*
Inventory problem, risk management, portfolio optimization.

Publications and Preprints

[1] Matei P. Coiculescu and Jincheng Yang. Conditional Liouville theorems for the Navier–Stokes equations. *arXiv e-prints*, 2025. `arXiv:2506.14533`.

[2] Fei Cao and Jincheng Yang. Quantitative convergence guarantees for the mean-field dispersion process. *arXiv e-prints*, 2024. `arXiv:2406.05043`.

[3] Jincheng Yang, Luhao Zhang, Ningyuan Chen, Rui Gao, and Ming Hu. Decision-making with side information: a causal transport robust approach. *OptOnline e-prints*, 2022. `OptOnline:20639`.

[4] Jincheng Yang, Vincent R. Martinez, Anna L. Mazzucato, and Alexis F. Vasseur. Energy dissipation near the outflow boundary in the vanishing viscosity limit. *Indiana University Mathematics Journal*, 2025. Forthcoming. `arXiv:2410.13127`.

[5] Jincheng Yang. Vorticity interior trace estimates and higher derivative estimates via

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blow-up method. *Journal of Differential Equations*, 442:113486, 2025. arXiv:2308.09350, doi:10.1016/j.jde.2025.113486.

[6] Luhao Zhang, Jincheng Yang, and Rui Gao. A short and general duality proof for Wasserstein distributionally robust optimization. *Operations Research*, 2024. Forthcoming. arXiv:2205.00362, doi:10.1287/opre.2023.0135.

[7] Alexis F. Vasseur and Jincheng Yang. Layer separation of the 3D incompressible Navier–Stokes equation in a bounded domain. *Communications in Partial Differential Equations*, 49(4):381–409, 2024. arXiv:2303.05236, doi:10.1080/03605302.2024.2346146.

[8] Luhao Zhang, Jincheng Yang, and Rui Gao. Optimal robust policy for feature-based newsvendor. *Management Science*, 70(4):2315–2329, 2024. OptOnline:18579. doi:10.1287/mnsc.2023.4810.

[9] Alexis F. Vasseur and Jincheng Yang. Boundary vorticity estimates for Navier–Stokes and application to the inviscid limit. *SIAM Journal on Mathematical Analysis*, 55(4):3081–3107, 2023. arXiv:2110.02426, doi:10.1137/22m1503567.

[10] Jincheng Yang. Construction of maximal functions associated with skewed cylinders generated by incompressible flows and applications. *Annales de l'Institut Henri Poincaré C. Analyse Non Linéaire*, 39(4):793–818, 2022. arXiv:2008.05588, doi:10.4171/aihpc/20.

[11] Alexis F. Vasseur and Jincheng Yang. Second derivatives estimate of suitable solutions to the 3D Navier-Stokes equations. *Archive for Rational Mechanics and Analysis*, 241(2):683–727, 2021. arXiv:2009.14291, doi:10.1007/s00205-021-01661-4.

[12] Zhiwu Lin, Jincheng Yang, and Hao Zhu. Barotropic instability of shear flows. *Studies in Applied Mathematics*, 144(3):289–326, 2020. arXiv:1801.00950, doi:10.1111/sapm.12297.

[13] Jincheng Yang and Zhiwu Lin. Linear inviscid damping for Couette flow in stratified fluid. *Journal of Mathematical Fluid Mechanics*, 20(2):445–472, 2018. arXiv:1610.08924, doi:10.1007/s00021-017-0328-3.

Honors and Awards

May 2022 Frank Gerth III Outstanding Dissertation Award, *UT Austin*
Mar 2021 University Graduate Continuing Fellowship, *UT Austin*
Apr 2019 Senate of College Council's TA of the Year, *UT Austin*

Invited Talks

Jul 2025 ICCOPT 2025, *University of Southern California*
May 2025 2025 AWM Research Symposium, *University of Wisconsin, Madison*
May 2025 SIAM Conference on Applications of Dynamical Systems (DS25), *Denver*
Apr 2025 PDE and Analysis Seminar, *University of California, Los Angeles*
Apr 2025 Analysis Seminar, *The University of Texas at Austin*
Mar 2025 Analysis of Fluids and Related Topics, *Princeton University*

Nov 2024 Analysis and Mathematical Physics, *Institute for Advanced Study*

Nov 2024 Harmonic Analysis & PDE Seminar, *CUNY Graduate Center*

Oct 2024 Informs Annual Meeting 2024, *Seattle*

Oct 2024 PDE Seminar, *Brown University*

Oct 2024 Short Talks by Postdoctoral Members, *Institute for Advanced Study*

Aug 2024 Probabaility Seminar, *University of Illinois Urbana-Champaign*

Jun 2024 EquaDiff 2024, *Karlstad University*

May 2024 Recent Advances in Nonlinear Partial Differential Equations, *University of Minnesota*

May 2024 SITE Research Center Talk Series, *New York University Abu Dhabi (zoom talk)*

Mar 2024 AMS Spring Southeastern Sectional Meeting, *Florida State University*

Feb 2024 Simons Turbulence Seminar, *Johns Hopkins University (zoom talk)*

Nov 2023 Calderón-Zygmund Analysis Seminar, *University of Chicago*

Nov 2023 PDE Seminar, *Purdue University*

Oct 2023 Applied Mathematics and Statistics Seminar, *Johns Hopkins University*

Oct 2023 8$^{\text{th}}$ Annual Meeting of the SIAM Central States Section, *University of Nebraska-Lincoln*

Aug 2023 10$^{\text{th}}$ International Congress on Industrial and Applied Mathematics, *Waseda University (zoom talk)*

Jul 2023 PDE and Applications Seminar, *Chinese Academy of Sciences*

May 2023 Midwest PDE Seminar, *University of Notre Dame*

Jan 2023 Calderón-Zygmund Analysis Seminar, *University of Chicago*

Dec 2022 PDE and Applications Seminar, *Chinese Academy of Sciences (zoom talk)*

Nov 2022 Analysis of Fluids and Related Topics, *Princeton University*

Oct 2022 Informs Annual Meeting 2022, *Indianapolis*

May 2021 AMS Spring Western Sectional Meeting, *San Francisco State University (zoom talk)*

Mar 2021 AMS Spring Eastern Sectional Meeting, *Brown University (zoom talk)*

Service

Seminar Organizing

2023–2024 **Calderón–Zygmund Analysis Seminar**, *University of Chicago*

2019 **Harmonic Analysis Reading Seminar**, *University of Texas at Austin*

Journal Refereeing

SIAM Journal on Mathematical Analysis

Journal of Differential Equations

Mathematical Programming

Nonlinearity

Teaching Experience

Instructor

Spring 2024 Math 18500 – Mathematical Methods in the Physical Sciences III

Winter 2024 Math 27300 – Basic Theory of Ordinary Differential Equations
Spring 2023 Math 18500 – Mathematical Methods in the Physical Sciences III
Winter 2023 Math 20400 – Analysis in $\mathbb{R}^n$ II
Fall 2022 Math 18500 – Mathematical Methods in the Physical Sciences III

Teaching Assistant

Spring 2021 M383D – Methods of Applied Mathematics II
2019-2020 M427J – Differential Equations with Linear Algebra
Fall 2018 M427L – Advanced Calculus for Applications II
Spring 2018 M408D – Sequences, Series, and Multivariable Calculus
Fall 2017 M408K – Differential Calculus

Mentoring Undergraduate Students

Research Experience for Undergraduates

Summer 2024 Minh Pham, *on the topic of Nonlinear Integral Equations*
Summer 2024 Michael Lee, *on the topic of Partial Regularity Theory of Navier-Stokes Equations*
Summer 2024 Zichen Lu, *on the topic of Inviscid Damping of Euler Equations*

Reading Course

Spring 2024 Dante Strollo and Jakob Wellington, *on the topic of Fourier Analysis*

Directed Reading Program

Summer 2024 Ariana Qin, *on the topic of Stochastic Calculus and Stochastic Control*
Spring 2024 Ariana Qin, *on the topic of Optimal Control Theory*
Fall 2021 Kyle Alkire, *on the topic of Schauder Theory in Elliptic Equations*
Spring 2020 Yongqi Pang, *on the topic of Statistics and Data Analysis*
Spring 2019 Trey Minor, *on the topic of Differential Equations and Dynamical Systems*
Spring 2018 Yan Cheng, *on the topic of Probability and Martingales*