
Appointments

- 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] Jincheng Yang, Vincent R. Martinez, Anna L. Mazzucato, and Alexis F. Vasseur. Energy dissipation near the outflow boundary in the vanishing viscosity limit. *arXiv e-prints*, 2024. [arXiv:2410.13127](#).
- [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. Vorticity interior trace estimates and higher derivative estimates via blow-up method. *arXiv e-prints*, 2023. [arXiv:2308.09350](#).
- [4] 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](#).
- [5] 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](#).

- [6] 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](#).
- [7] 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](#).
- [8] 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](#).
- [9] 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](#).
- [10] 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](#).
- [11] 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](#).
- [12] 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](#).

Ph.D. Thesis

Title *Partial regularity results for the three-dimensional incompressible Navier–Stokes equation*
 Advisors Prof. Luis Caffarelli and Prof. Alexis Vasseur
 Description We show a series of works of some regularity results on the incompressible Navier–Stokes equation in dimension three.

Undergraduate Thesis

Title *Linear Inviscid Damping of a Shear Flow in a Half-Space and a Finite Channel*
 Advisors Prof. Dongsheng Li and Prof. Zhiwu Lin
 Description We show the decay rate for velocity and density variation to linearized Euler equations near stratified Couette flow under optimal regularity.

Honors and Awards

May 2022 Frank Gerth III Outstanding Dissertation Award, *UT Austin*
 Mar 2021 University Graduate Continuing Fellowship, *UT Austin*
 June 2020 Frank Gerth III Teaching Excellence Award, *UT Austin*
 Apr 2019 Senate of College Council’s TA of the Year, *UT Austin*
 June 2018 Frank Gerth III Graduate Excellence Award, *UT Austin*
 Oct 2016 Outstanding Student (The highest honor on campus, $\frac{1}{30000}$), *XJTU*

Institute for Advanced Study • 1 Einstein Dr • Princeton, NJ 08540

☎ (512) 317-7231 📞 (609) 734-4505 ✉ jcyang@ias.edu

🌐 www.math.ias.edu/~jcyang/

Sept 2016 National Scholarship, *Ministry of Education, China*

Invited Talks

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 Probabilistic 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 8th Annual Meeting of the SIAM Central States Section, *University of Nebraska-Lincoln*
Aug 2023 10th 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

Teaching Experience

Instructor

Institute for Advanced Study • 1 Einstein Dr • Princeton, NJ 08540

☎ (512) 317-7231 ☎ (609) 734-4505 ✉ jcyang@ias.edu

🌐 www.math.ias.edu/~jcyang/

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*