Jincheng Yang

About Me

Education

2017-2022	**Ph.D. in Mathematics (Pure)**, *The University of Texas at Austin*, Austin, TX.
	Advisor: Prof. Luis A. Caffarelli and Prof. Alexis F. Vasseur
2016	**Visiting Honors Student Program**, *Georgia Institute of Technology*, Atlanta, GA.
2015	**Visiting Undergraduate Student**, *Columbia University*, New York City, NY.
2013-2017	**B.Sc. in Mathematics and Applied Mathematics**, *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, free boundary problem, harmonic analysis, meteorology, plasma physics.*
	Euler equation, Navier–Stokes equation, surface quasi-geostrophic equation, Grad equation.
MSOR	**Management Science and Operation Research**, *distributionally robust optimization, optimal mass transportation, causal transport.*
	Inventory problem, risk management, portfolio optimization.

Honors and Awards

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, $^{10}/_{30000}$), *XJTU*
Sept 2016	National Scholarship, *Ministry of Education, China*

Publications and Preprints

2021 Alexis F. Vasseur and Jincheng Yang. Second derivatives estimate of suitable solutions to the 3D Navier–Stokes equations. *Arch. Ration. Mech. Anal.*, 241(2): 683–727, 2021.

Jincheng Yang. Construction of maximal functions associated with skewed cylinders generated by incompressible flows and applications. *to appear in Ann. Inst. H. Poincaré Anal. Non Linéaire*, 2021. arXiv:2008.05588.

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Alexis F. Vasseur and Jincheng Yang. Boundary vorticity estimates for Navier-Stokes and application to the inviscid limit. *submitted*, 2021. arXiv:2110.02426.

Rui Gao, Jincheng Yang, and Luhao Zhang. Robust policy optimization for feature-based newsvendor. *submitted*, 2021.

Rui Gao, Jincheng Yang, and Luhao Zhang. Finite-sample guarantees for causal distributionally robust optimization. *in preparation*, 2021.

Ningyuan Chen, Rui Gao, Ming Hu, Jincheng Yang, and Luhao Zhang. Distributionally robust end-to-end learning with contextual information. *in preparation*, 2021.

2020   Zhiwu Lin, Jincheng Yang, and Hao Zhu. Barotropic instability of shear flows. *Stud. Appl. Math*, 144(3):289–326, 2020.

Rui Gao, Jincheng Yang, and Luhao Zhang. A simple duality proof for Wasserstein distributionally robust optimization. *in preparation*, 2020.

2018   Jincheng Yang and Zhiwu Lin. Linear inviscid damping for Couette flow in stratified fluid. *J. Math. Fluid Mech.*, 20(2):445–472, 2018.

2014   Tao Xie, Xiangqian Cheng, and Jincheng Yang. *RAPTOR Program Designing Tutorial.* Tsinghua University Press, Beijing, 2014.

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 showed the decay rate for velocity and density variation to linearized Euler equations near stratified Couette flow under optimal regularity.

Academic Experience

Conferences and Workshops

Jul 2021   Banff International Research Station, *New Mechanisms for Regularity, Singularity, and Long Time Dynamics in Fluid Equations*

Jul 2020   Mathematical Sciences Research Institute, *Virtual Summer Graduate School: Introduction to Water Waves*

Jul 2019   Northwestern University, *Summer School in Semiclassical Analysis*

Jun 2019   Instituto de Ciencias Matemáticas, *Summer School on Fluid Mechanics at the ICMAT*

May 2019   Columbia University, *Workshop on Free Boundary Problems*

Mar 2019   The University of Texas at Austin, *On Nonlinear PDEs and their Applications*

Invited Talks

May 2021   AMS Spring Western Sectional Meeting.
Special Session on Nonlinear PDEs and Fluid Dynamics

Mar 2021	AMS Spring Eastern Sectional Meeting. Contributed Paper Session

Seminar Talks

Apr 2021	Junior Analysis Seminar, *Shapley Extension and Application*
Oct 2020	Junior Analysis Seminar, *Distributionally Robust Optimization*
Apr 2020	Junior Analysis Seminar, *Oscillatory Integral and Decay of Dispersive Equation*
Mar 2020	Ph.D. Candidacy Talk, *A New Covering Lemma and its Application in 3D Incompressible Navier-Stokes Equations*
Nov 2019	Harmonic Analysis Reading Seminar, *Introduction to Hardy Space*
Nov 2019	Junior Analysis Seminar, *A Covering Lemma for Fluid and Application to Navier-Stokes Equation*
Oct 2019	Stochastic Calculus in Manifold Reading Seminar, *Manifold-valued Semimartingales and their Quadratic Variation*
Apr 2019	Junior Analysis Seminar, *Regularity for a Local-Nonlocal Transmission Problem*
Apr 2018	Sophex Seminar, *An Introduction to Stochastic Integrals*
Sep 2017	Sophex Seminar, *Stability and instability of shear flow in a rotating system*
Apr 2017	Fluid Mechanics Seminar, *Inviscid Damping of Couette Flow in a Stratified Fluid*

Journal Refereeing

SIAM Journal on Mathematical Analysis

Teaching

Teaching Assistant

Spring 2021	M383D – Methods of Applied Mathematics II
Fall 2020	M427J – Differential Equations with Linear Algebra
Spring 2020	M427J – Differential Equations with Linear Algebra
Fall 2019	M427J – Differential Equations with Linear Algebra
Spring 2019	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

Fall 2021	Kyle Alkire, *on the topic of Elliptic Partial Differential 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*

Reference List

Luis A. Caffarelli

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