

Yiran Hu

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Education	Department of Mathematics, University of Texas at Austin Ph.D. Mathematics, May 2024(expected) Advisor: Prof. Alexis F. VASSEUR Nanjing University B.S. Pure and Applied Mathematics(Cum Laude), July 2018
Research Interest	My research interest lies in PDE analysis and numerical computation. Now, I am focusing on a family of degenerated 3D Quasi-geostrophic systems.
Research and Publications	Yiran Hu. Global in Time Weak Solutions to Singular 3D Quasi-Geostrophic Systems , preprint, arXiv:2302.05973 (2023) Yiran Hu, Alexis Vasseur. Propagation of Regularity for a Singular Family of 3D Quasi-Geostrophic System , In preparation. Yiran Hu, Alexis Vasseur. An Extension Problem related to the 2D Euler Equation , In preparation.
Skills	Programme: Python, L ^A T _E X, MATLAB, C++ Language: Chinese(Mothertongue), English(Fluent)
Awards	<ul style="list-style-type: none">• 2019, 2020 Summer fellowship• 2019, 2022, 2023 Travel support from conferences
Teaching	Teaching Assistant: M408C (Calculus 1), M408D (Calculus 2), M427J (Differential Equation and Linear Algebra), M362K (Probability), M381D (Graduate Complex Analysis), M387C (Graduate Numerical Analysis 1), M328K (Introduction to Number Theory), M383C(Graduate Methods of Applied Mathematics 1).
Service	Numerical PDE Learning Seminar Co-organized a weekly learning seminar on finite element methods, Fall 2021. Junior Analysis Seminar Organized a student-run weekly seminar on analysis, Fall 2020-Spring 2021. Analysis Learning Seminar Co-organized a learning seminar on second order elliptic equations and harmonic analysis, Fall 2019. Direct Reading Program Mentored undergraduate students through one-on-one reading courses on Support Vector Machine, Stochastic Calculus for Finance, Discrete Fourier and Wavelet Transforms, Quantum Mechanics, Fall 2019-Fall 2020 and Fall 2021.

Group Seminar of Vasseur's team

Organized the weekly group seminar with Professor Alexis Vasseur, students and visitors, Spring 2023.

Presentations

Global in Time solutions to singular 3D Quasi-Geostrophic Systems, Workshop on Stability Analysis for Nonlinear Partial Differential Equations across Multiscale Applications, Penn State University, PA, October 16-18, 2023

Global in Time solutions to singular 3D Quasi-Geostrophic Systems, 2023 Fall South-eastern Sectional Meeting, University of South Alabama, Mobile, AL, October 13-15, 2023

Global in Time Weak Solutions to Singular 3D Quasi-Geostrophic Systems, ICIAM 2023, Waseda University, Tokyo(Japan), August 20-25, 2023

Generalized Trace Theorem and The Beale-Kato-Majda Criterion on Euler Equation, Group Seminar, University of Texas at Austin, Spring 2023

Existence of Global in Time Weak Solutions to a Family of Singular 3D Quasi-Geostrophic Systems, Recent Trends in Partial Differential Equations — Summer School, Duke University, Aug. 2022

Existence of Global in Time Weak Solutions to a Family of Singular 3D Quasi-Geostrophic Systems, International Conferences on Hyperbolic Problems, Málaga (Spain), June 2022

Existence of Global in Time Weak Solutions to a Family of Singular 3D Quasi-Geostrophic Systems, Junior Analysis Seminar, UT Austin, Feb. 2022

Existence of Global in Time Weak Solutions to a Family of Singular 3D Quasi-Geostrophic Systems, Texas Women In Math Symposium 2022, Feb. 2022

A Maximum Principle Applied to Quasi-Geostrophic, Junior Analysis Seminar, UT Austin, Sept. 2020

Besov Space and its Application, Group Seminar, UT Austin, Apr. 2020

The 3D Quasi-Geostrophic System, Candidacy Talk, UT Austin, Mar. 2020

The 3D Quasi-Geostrophic System, Student Short Presentation, MSRI, July 2019

Conferences

Workshop on Stability Analysis for Nonlinear Partial Differential Equations across Multiscale Applications, Penn State University, PA, October 16-18, 2023

AMS 2023 Fall Southeastern Sectional Meeting, University of South Alabama, Mobile, AL, October 13-15, 2023

ICIAM 2023, Waseda University, Tokyo(Japan), August 20-25, 2023

Shocking Developments: New Directions in Compressible and Incompressible Flows: A Conference in Honor of Alexis Vasseur's 50th Birthday, Max Planck Institute for Mathematics in the Sciences, Leipzig(Germany), June 26 - 30, 2023

Recent Trends in Partial Differential Equations — Summer School, Duke University, August 22-26, 2022

International Conferences on Hyperbolic Problems, Málaga (Spain), June 20-24, 2022

Nonlinear PDEs in Fluid Dynamics, CIRM (Marseille Luminy, France), May 9th- May 13th, 2022

Texas Women In Math Symposium 2022, Rice University, Feb. 4th- Feb 5th, 2022

New Mechanisms for Regularity, Singularity, and Long Time Dynamics in Fluid Equations(Online), BIRS, July 25th- July 20th, 2021

Summer Graduate School on Introduction to Water Waves, MSRI, July 27th- Aug.7, 2020

Recent Topics on Well-posedness and Stability of Incompressible Fluid and Related Topics, MSRI, July 22nd- August 2nd, 2019

Summer Graduate School on Recent Advances in Mathematical Fluid Dynamics, USC, May 20-24, 2019