Jiajie Chen

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Education

California Institute of Technology — Pasadena, California
Ph.D. Candidate in Applied and Computational Mathematics — Aug 2017 –present
Advisor: Prof. Thomas Y. Hou

Peking University — Beijing, China
B.S. in Mathematics, Minor in Economics — Sep 2013 –July 2017
Undergrad research advisors: Profs. Pingwen Zhang, Zhifei Zhang

The Affiliated High School of SCNU — Guangzhou, China
Middle School and High School — Sep 2007 –June 2013

Research Interests

Partial differential equations, probability, and applied math

Publications

1. J. Chen. On the regularity of the De Gregorio model for the 3D Euler equations. *To appear in J. Eur. Math. Soc., preprint arXiv:2107.04777,* 2021.

2. J. Chen, T. Y. Hou, & D. Huang. Asymptotically self-similar blowup of the Hou-Luo model for the 3D Euler equations. *preprint arXiv:2106.05422,* 2021.

3. J. Chen. On the slightly perturbed De Gregorio model on S^1. *Arch. Rational Mech. Anal. 241, 1843–1869,* 2021.

4. J. Chen, & T. Y. Hou. Finite time blowup of 2D Boussinesq and 3D Euler equations with $C^{1,\alpha}$ velocity and boundary. *Comm. Math. Phys. 383(3), 1559-1667,* 2021.

5. J. Chen. Singularity formation and global well-posedness for the generalized Constantin–Lax–Majda equation with dissipation. *Nonlinearity, 33(5), 2502,* 2020.

6. J. Chen, T. Y. Hou, & D. Huang. On the finite time blowup of the De Gregorio model for the 3D Euler equation. *Comm. Pure Appl. Math. 74(6), 1282-1350,* 2021.

7. J. Chen, P. Zhang, & Z. Zhang. Local minimizer and De Giorgi's type conjecture for the isotropic–nematic interface problem. *Calc. Var. Partial Differential Equations 57, no. 5, Paper No. 129, 19 pp*, 2018.

8. J. Chen, A. Hou, & T. Y. Hou. A pseudo knockoff filter for correlated features. *Inf. Inference 8, no. 2, 313–341*, 2019.

9. J. Chen, A. Hou, & T. Y. Hou. A prototype knockoff filter for group selection with FDR control. *Inf. Inference 9, no. 2, 271–288*, 2020.

Invited Talks

2022

- Stanford Applied Math Seminar, Stanford University (online), Apr 2022.
- Caltech/UCLA/USC Joint Analysis Seminar, Caltech, Apr 2022.
- Workshop on recent developments in incompressible fluid dynamics, Institute for Advanced Study, Apr 2022.
- PDE Seminar, University of Minnesota, Mar 2022.

2021

- Applied Math & Analysis Seminar, Duke University, Nov 2021.
- CMX Student and Postdoc Seminar, Caltech, Oct 2021.
- Applied Math Seminar, University of New Mexico (online), Sep 2021.
- Computational and Applied Math Ph.D. Students Workshop, Peking University (online), Sep 2021.
- PDE Seminar, Seoul National University (online), Aug 2021.
- Chinese Webinar on Analysis & PDE, Aug 2021.
- Student-Run Analysis & PDE, University of California, Davis (online), Jan 2021.

2020

- Analysis Seminar, Korea Institute for Advanced Study (online), Dec 2020.
- PDE Seminar, University of Minnesota (online), Nov 2020.
- Mathematical Research Seminar, Duke Kunshan University (online), Nov 2020.
- Differential Equations Seminar, University of Michigan, Jan 2020.

2019

- Workshop on mathematics of fluid motion III: theory and computation, Korea Institute for Advanced Study, Dec 2019.
- PDE Seminar, Nonlinear PDE Center, Chung-Ang University, Korea, Dec 2019.
- Analysis and PDE Seminar, University of California, San Diego, Nov 2019.
- Analysis and PDE Seminar, Peking University, Beijing, China, Sep 2019.
- Invited member of AIM Square: Towards a 3D Euler singularity, AIM, San Jose, CA, May 2018, Aug 2019.
- Workshop on fluid turbulence and singularities of the Euler/ Navier Stokes equations, Harvard University, Mar 2019.

2018

- Workshop on multiscale problems in materials science and biology: analysis and computation, Tsinghua Sanya International Mathematics Forum, Jan 2018.

Honors and Scholarships

- Outstanding Undergraduate, Peking University and Beijing 2017
- Innovation Prize, Peking University 2016
- National Scholarship, Peking University 2014
- Chinese Mathematical Olympiad (CMO), Gold Medal (Full Score) 2013
- Chinese Mathematical Olympiad (CMO), Silver Medal 2012

Teaching

Teaching Assistant at Caltech

- ACM 109. Mathematical Modelling. Spring 2021
- ACM 217. Advanced Topics in Stochastic Analysis. Winter 2021
- ACM 204. Randomized Algorithms for Linear Algebra. Winter 2020
- CMS/ACM 117. Probability Theory and Stochastic Processes. Fall 2019, Fall 2020
- ACM 95/100b. Introductory Methods of Applied Mathematics. Spring 2019, Spring 2020
- ACM 106b. Introductory Methods of Computational Mathematics. Winter 2019
- ACM 106a. Introductory Methods of Computational Mathematics. Fall 2018

Service

Co-organizer of the CMX Student / Postdoc Seminar at Caltech, Oct 2020 – Mar 2021, Oct 2021 – Dec 2021.

Languages

English (fluent), Cantonese (native), Chinese (native).