

## EDUCATION



### Ph.D. Student in Applied Mathematics

09/2023–Present

*Division of Applied Mathematics, Brown University*

- Coursework: Real/Functional Analysis, PDE, Numerical PDE, Probability



### B.Sc. in Information & Computational Science

09/2019–06/2023

*School of the Gifted Young, University of Science and Technology of China*

- GPA: 3.96 / 4.30 (91.77 / 100.00) (Rank 1<sup>st</sup> / 40 in the major)
- Coursework: Real/Complex/Functional Analysis, Probability, PDE, Numerical Analysis, Numerical PDE, Finite Element Methods

## RESEARCH INTERESTS

- **High-Order Numerical Methods for PDEs:** discontinuous Galerkin, finite element
- **Scientific Computing:** parallel PDE solvers, iterative methods

## PREPRINTS

1. **Y. Wu** and Y. Xu, *A high-order local discontinuous Galerkin method for the  $p$ -Laplace equation* (special issue in honor of Chi-Wang Shu's 65<sup>th</sup> birthday), submitted to Beijing Journal of Pure and Applied Mathematics, Nov. 2023. arXiv:2311.09119.

## RESEARCH EXPERIENCES

### Numerical Simulation of Plasma Equilibrium Evolution in Nuclear Fusion

*Supervisor: Prof. Mengping Zhang*

USTC undergraduate research project, 06/2021–05/2022

- Developed a parallel hybrid finite difference-pseudo spectral code for resistive MHD in toroidal geometry, and performed long-time simulation of resistive tearing mode instability in tokamaks
- Checked the results with researchers from the Institute of Plasma Physics, CAS, and against those from existing open-source codes
- Discussed the methodology and results with Prof. Chi-Wang Shu

### Positivity-Preserving Conservative Low Rank Methods for Vlasov Dynamics

*Supervisor: Prof. Xiangxiong Zhang*

Purdue University (remote), 06/2022–08/2022

- Developed a low-rank correction algorithm with positivity preservation and orthogonality constraints via optimization, which can post-process data from a dynamic low-rank solver

### Discontinuous Galerkin Methods for the $p$ -Laplacian Equation

*Supervisor: Prof. Yan Xu*

Bachelor's thesis at USTC, 12/2022–06/2023

- Proved an a priori error estimate for an LDG scheme for the  $p$ -Laplacian equation
- Developed and implemented an efficient preconditioned gradient descent method

## TEACHING EXPERIENCES

- TA, Computational Methods B, USTC (*Instructor: Prof. Jingrun Chen*) Spring 2022

## HONORS AND AWARDS

- 2023 USTC SGY Rose Scholarship (New Lotus) 06/2024
- Howard and Jan Swearer Graduate Fellowship AY 2023–2024

- USTC Outstanding Undergraduate Award 06/2023
- “Chia-Chiao Lin” Gold Medal (Top 1 in China), the 14<sup>th</sup> S.-T. Yau College Student Math Contest, Applied and Computational Math track 06/2023
- Team Silver Medal, the 14<sup>th</sup> S.-T. Yau College Student Math Contest 06/2023
- Excellence Prize, the 14<sup>th</sup> S.-T. Yau College Student Math Contest, Analysis and PDEs track 06/2023
- Gold Prize, USTC Outstanding Student Scholarship 10/2022
- Excellence Prize, the 13<sup>th</sup> S.-T. Yau College Student Math Contest, Analysis and PDEs track 08/2022
- China National Scholarship 12/2021
- Second Prize, the 13<sup>th</sup> Chinese Math Competitions 12/2021
- China National Scholarship 12/2020
- Third Prize, USTC Freshman Scholarship 09/2019

### PROFESSIONAL SKILLS

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- **Programming:** C/C++, Matlab, Fortran, Python, MPI, LaTeX
- **Language:** Mandarin Chinese, English

### PROFESSIONAL MEMBERSHIPS

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- Society for Industrial & Applied Mathematics (SIAM) Since 01/2024
- American Mathematical Society (AMS) Since 09/2023

### EXTRACURRICULAR ACTIVITIES

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- Road cycling racing team member, USTC 09/2019–06/2023
- Monitor of class 2019-3 for math-majored students, SGY, USTC 03/2022–06/2023

*Updated: June 21, 2024*