# YUE WU

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## EDUCATION

**Division of Applied Mathematics, Brown University**
*Ph.D. Student in Applied Mathematics* 09/2023–Present

**School of the Gifted Young, University of Science and Technology of China**
*B.S. in Information & Computational Science* 09/2019–06/2023

- GPA: 3.96 / 4.30 (91.77 / 100.00) (rank in the major: 1st / 40)
- Coursework: Real/Complex/Functional Analysis, Probability, Differential Equations I/II (undergrad/grad), Numerical Analysis, Numerical PDE (grad), FEM (grad), CFD (grad; audit), etc.

## RESEARCH INTERESTS

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

## 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 65th birthday), submitted to *Beijing Journal of Pure and Applied Mathematics*, Nov. 2023. arXiv:2311.09119 [math.NA]. DOI: 10.48550/arXiv.231109119.

## RESEARCH EXPERIENCE

**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, 12/2022–06/2023

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

## TEACHING EXPERIENCE

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

## HONORS AND AWARDS

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

## PROFESSIONAL SKILLS

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

## PROFESSIONAL MENBERSHIP

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

## EXTRACURRICULAR ACTIVITIES

- 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: November 15, 2023*