

# Wu, Yue (吴越)

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## EDUCATION



**Ph.D. Student in Applied Mathematics**

09/2023–Present

*Division of Applied Mathematics, Brown University*



**B.S. in Information & Computational Science**

09/2019–06/2023

*School of the Gifted Young (SGY), University of Science and Technology of China (USTC)*

- Overall GPA: 3.96 / 4.30 (91.77 / 100.00) (rank in the major: 1<sup>st</sup> / 40)
- Thesis: Discontinuous Galerkin Methods for the  $p$ -Laplacian Equation; Supervisor: Prof. Yan Xu
- 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, spectral methods
- **Scientific Computing:** parallel solvers, GPU acceleration

## RESEARCH EXPERIENCE

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

06/2021–05/2022

*USTC; Supervisor: Prof. Mengping Zhang*

- Developed a parallel hybrid finite difference-pseudo spectral code for resistive MHD in toroidal geometry
- 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**

06/2022–08/2022

*Purdue University (remote); Supervisor: Prof. Xiangxiong Zhang*

- 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**

12/2022–06/2023

*USTC; Supervisor: Prof. Yan Xu*

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

## TEACHING EXPERIENCE

- TA, Computational Methods B (001511.07), USTC (Instructor: Prof. Jingrun Chen) Fall 2022

## HONORS AND AWARDS

- USTC Outstanding Undergraduate Award 06/2023

- “Chia-Chiao Lin” Gold Medal (top 1), the 14<sup>th</sup> S.-T. Yau College Student Mathematics Contest, Applied and Computational Mathematics track 06/2023
- Team Silver Medal, the 14<sup>th</sup> S.-T. Yau College Student Mathematics Contest 06/2023
- Excellence Prize, the 14<sup>th</sup> S.-T. Yau College Student Mathematics 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 Mathematics Contest, Analysis and PDEs track 08/2022
- China National Scholarship (top 3%) 12/2021
- Second Prize, the 13<sup>th</sup> Chinese Mathematics Competitions (CMC) 12/2021
- China National Scholarship (top 3%) 12/2020
- Third Prize, USTC Freshman Scholarship 09/2019

## PROFESSIONAL SKILLS

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

## EXTRACURRICULAR ACTIVITIES

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