ZHIFEI GUI

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RESEARCH INTERESTS

Theoritical Plasma Physics, Computational Plasma Physics

EDUCATION

Doctor of Philosophy in Physics , Dartmouth College — Expected 2031
Bachelor of Science in Physics, Huazhong University of Science and Technology(HUST) — 2022 - 2026
Awarded "Outstanding Graduate of HUST"

PUBLICATION

[1] **Zhifei Gui**, P. Zhu, D. F. Escande, "Hamiltonian estimation of island width threshold for stochasticity onset on edge pedestal top in the presence of a resonant magnetic perturbation," *Phys. Plasmas* **33**, 022502 (2026). doi:10.1063/5.0307633

RESEARCH EXPERIENCE

Undergraduate Research Assistant — September 2023 – February 2026
International Joint Research Laboratory of Magnetic Confinement Fusion and Plasma Physics — *Wuhan, China*
Project: The Hamiltonian Principle of Magenetic Field Lines
Advisors: Prof. Ping Zhu (HUST) & Prof. D. F. Escande (Aix-Marseille University)

- Led a provincial-level undergraduate innovation project (2024), achieving "Excellent Completion" evaluation by the School of Physics, HUST.
- Proposed canonical transformations for the generalized toroidal magnetic field line Hamiltonian by converting 3D magnetic field Hamiltonian into two-wave paradigm Hamiltonian.
- Developed an efficient symplectic mapping code with `MATLAB`/`Fortran` based on S. S. Abdullaev's theory.
- Verified model reliability by combining three methods (renormalization group, Lyapunov exponents, and weighted Birkhoff average), identifying the critical island width at the onset of large-scale stochasticity.

AWARDS

- Outstanding Undergraduate Graduate — April 2026
- Star of Self-Improvement of HUST — March 2025
- Third Prize in China Undergraduate Mathematical Contest in Modeling (Top 15%) — September 2024
- First Prize in the 15$^{\text{th}}$ National College Mathematics Competition (Top 7%) — December 2023
- First Prize in the 12$^{\text{th}}$ Provincial College Mathematics Competition — December 2023

SCHOLARSHIPS

- Scholarship of Outstanding Project in Undergraduate Research Training — November 2025
- Excellent Voluntary and Public Service Scholarship of HUST — May 2023/ September 2023
- Self-Improvement Scholarship of HUST — September 2023 / September 2025
- Science and Technology Innovation Scholarship of HUST — September2025

SKILLS

Programming: `Fortran` (Proficient), `MATLAB` (Proficient), `Python` (Medium), `C++` (Elementary)
Language: English, Chinese

Latest Update: April 30, 2026