# Enze Hou

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## Education

**2021.9–present**   **Ph.D. Candidate in Fundamental Mathematics**, Institute of Applied Physics and Computational Mathematics, China.

Advisors: Prof. Han Wang, Prof. Wengu Chen.

**2020.1–2020.7**   **Exchange Student**, Georgia Institute of Technology, USA.

**2017.9–2021.6**   **B.S. in Mathematics and Applied Mathematics**, Taishan College, Shandong University, China.

## Research Interests and Experience

My research focuses on machine learning methods for multi-scale modeling, especially in quantum many-body physics and ultrafast dynamics.

- Developed machine learning potentials to simulate dynamic mechanical response of materials under extreme conditions.
- Proposed a neural network framework for solving the time-dependent Schrödinger equation in real space.
- Familiar with deep learning techniques such as physics-informed neural networks (PINNs), graph neural networks (GNNs), and generative models.
- Familiar with quantum chemistry simulation methods, including traditional methods like Hartree-Fock (HF), Full Configuration Interaction (FCI), and machine learning based methods like FermiNet.
- Current research: machine learning modeling of ultrafast dynamics in quantum many-body systems.
- Broader interests: Monte Carlo methods, scientific computing, uncertainty quantification.

## Publications and Preprints

**2025**   Enze, Hou, Yuzhi Liu, Lei Wang*, Han Wang*
**A Global Spacetime Optimization Approach to the Real-Space Time-Dependent Schrödinger Equation** [Preprint]
*arXiv preprint*. arXiv:2511.12983.

**2025**   Enze, Hou, Xiaoyang Wang, Han Wang*
**Revealing the dynamic responses of Pb under shock loading based on DFT-accuracy machine learning potential** [Published]
*Chinese Physics B*. doi:10.1088/1674-1056/ae1726.

**2025**   Xiaoyang Wang, Enze, Hou, Han Wang*
**A Machine Learning Potential Model for Simulating Dynamic Mechanical Response of Pb-Sn Alloy** [Published]
*Chinese Journal of High Pressure Physics*. doi:10.11858/gywlxb.20251151.

## Presentations

**2025.8**   **2025 Beijing-Tianjin-Hebei+ Computational Mathematics Academic Exchange Conference**.
Jinan, China. Enze, Hou.

## Awards and Honors

**2023**   Outstanding Graduate Student Cadre, IAPCM

**2022**   Outstanding Graduate Student, IAPCM

| 2018 | First-Class Specialty Scholarship, Shandong University |
| 2018 | Outstanding Student Cadre, Shandong University |

## Skills

- Programming Languages: Python, C, MATLAB.
- Scientific Computing: Quantum chemistry packages (PySCF), Machine learning frameworks (PyTorch, JAX), DFT software (VASP, ABACUS), Visualization tools (OVITO).
- Computing Environment: Linux, Git, HPC clusters, Shell scripting.
- Tools: LaTeX, Markdown.
- Languages: Mandarin (native), Cantonese, English (fluent).