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Current Appointment

Current **Postdoctoral researcher**
Singapore University of Technology and Design (SUTD), Singapore.

Education

2021.9-2026.6 **Ph.D. 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 Hartree-Fock (HF), Full Configuration Interaction (FCI), and machine learning based methods such as FermiNet.
- Current research: machine learning modeling of ultrafast dynamics in quantum many-body systems.
- Broader interests: Monte Carlo methods, scientific computing, uncertainty quantification.

Skills

- **Programming:** Python, C, MATLAB.
- **Scientific computing:** PySCF; PyTorch, JAX; VASP, ABACUS; OVITO.
- **Computing environment:** Linux, Git, HPC clusters, Shell scripting.
- **Tools:** LaTeX, Markdown.
- **Languages:** Mandarin (native), Cantonese, English (fluent).

Publications

2026

Mengsa Wang, **Enze Hou**, Han Wang
Machine Learning-Based Methods for Electronic Structure Calculations
Journal on Numerical Methods and Computer Applications **47**(2), 160-183 (2026).
DOI: 10.12288/szjs.s2025-1040

2026

Enze Hou, Yuzhi Liu, Linxuan Zhang, Difa Ye, Lei Wang*, Han Wang*
A global spacetime optimization approach to the real-space time-dependent Schrödinger equation
Machine Learning: Science and Technology **7**(3), 035012 (2026).
DOI: 10.1088/2632-2153/ae62c8 | arXiv:2511.12983

2026

Enze Hou, Xiaoyang Wang, Han Wang
A Machine Learning Potential Model for Simulating Dynamic Mechanical Response of Pb-Sn Alloy
Chinese Journal of High Pressure Physics **40**(1), 010106 (2026).
DOI: 10.11858/gywlx.20251151

2026

Enze Hou, Xiaoyang Wang, Han Wang*
Revealing the dynamic responses of Pb under shock loading based on DFT-accuracy machine learning potential
Chinese Physics B **35**(1), 018701 (2026).
DOI: 10.1088/1674-1056/ae1726 | arXiv:2511.12995

* Corresponding author.

Presentations

2025.12.10

A Global Spacetime Optimization Approach to the Real-Space Time-Dependent Schrödinger Equation
Center for Partial Differential Equations and Applications, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China.

2025.8

2025 Beijing-Tianjin-Hebei+ Computational Mathematics Academic Exchange Conference.
Jinan, China.

Selected Awards and Honors

2026

Outstanding Graduate, Beijing Higher Education Institutions.

2026

Outstanding Graduate, Graduate School of China Academy of Engineering Physics.

2021-2024

Outstanding Graduate Student, China Academy of Engineering Physics.
Academic years: 2021-2022, 2022-2023, 2023-2024.

2021-2023

Outstanding Graduate Student Leader, China Academy of Engineering Physics.
Academic years: 2021-2022, 2022-2023.