Ze Ouyang

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Education

University of Texas at Austin — Austin, U.S.
Ph.D. candidate in Physics, Advisor: Michael Downer — Fall 2022–Current

Huazhong University of Science and Technology — Wuhan, China
B.Sc. in Physics, Advisor: Pengshun Luo — Fall 2018–Summer 2022

- Thesis: "Experimental search for exotic spin-spin interactions at the micrometer range"

Research interest

- Diagnostics for laser wakefield acceleration
- AI for science, such as neural network approach for inverse problems and partial differential equations
- Experimental search for new physics

Experience

University of Texas at Austin — Austin, U.S.
Research Assistant in LWFA Group (Experimental laser physics) — Fall 2022–Current

Helmholtz-Zentrum Dresden-Rossendorf (HZDR) — Dresden, Germany
Visiting Student in Institute of Radiation Physics (Experimental laser physics) — Summer 2025-Current

Huazhong University of Science and Technology — Wuhan, China
Research Assistant in ENP Group (Experimental condensed matter physics) — Spring 2019–Summer 2022

- Simulation of condensed matter phenomenon by finite element analysis
- Proposal of an experiment to search for exotic spin-spin interactions
- Theoretical motivation of the axion

Chinese University of Hong Kong — Hong Kong, China
Honorary Research Assistant in The Jianfang Wang Group (Nanophotonics) — Summer 2021

- Synthesis of nanoparticles including nanospheres, nanoplates, nanorods, and et al
- Optical characterization of the nanoparticles

Publications

1. Proposal for the search for exotic spin-spin interactions at the micrometer scale using functionalized cantilever force sensors.

   Qian Wang, **Ze Ouyang**, Pengshun Luo✉et al, Phys. Rev. D, 107, 015005 (2023)

2. Reconstruction, Analysis of the Process ggH Decay to ll$\nu\nu$ Monte Carlo with MH=125 GeV and Introduction of the Physical Background.

   Fanli Zeng✉, Yiwei Liu, **Ze Ouyang** et al, J. Phys.: Conf. Ser., 2287 012030 (2022)

Softwares

- cupyint: A CuPy-based Python package for numerical integration on GPU.
- torchint: A PyTorch-based Python package for numerical integration on GPU, especially for machine learning.
- numpyint: A NumPy-based Python package for numerical integration on CPU.

Skills

- **Programming:** C++, Python (Machine learning), Fortran
- **Simulating:** COMSOL
- **Data processing:** MATLAB, Mathematica, Origin
- **Other:** LaTeX, Github

Teaching

- **Lab Teaching Assistant** at The University of Texas at Austin — Fall 2024
  Lab for PHY 302L/303L/317L (PHY 105N, Unique number: 56365)
  Instructor: Prof. Perera
- **Lab Teaching Assistant** at The University of Texas at Austin — Fall 2024
  Lab for PHY 302L/303L/317L (PHY 105N, Unique number: 56405)
  Instructor: Prof. Perera
- **Lab Teaching Assistant** at The University of Texas at Austin — Spring 2024
  Lab for PHY 302L/303L/317L (PHY 105N, Unique number: 55710)
  Instructor: Prof. Loveridge
- **Lab Teaching Assistant** at The University of Texas at Austin — Spring 2024
  Lab for PHY 302L/303L/317L (PHY 105N, Unique number: 55575)
  Instructor: Prof. Loveridge
- **Lab Teaching Assistant** at The University of Texas at Austin — Fall 2023
  Lab for PHY 302L/303L/317L (PHY 105N, Unique number: 57430)
  Instructor: Prof. Loveridge
- **Lab Teaching Assistant** at The University of Texas at Austin — Fall 2023
  Lab for PHY 302L/303L/317L (PHY 105N, Unique number: 57460)
  Instructor: Prof. Loveridge
- **Lab Teaching Assistant** at The University of Texas at Austin — Summer 2023
  Lab for PHY 302K/303K/317K (PHY F105M, Unique number: 86935)
  Instructor: Prof. Loveridge
- **Teaching Assistant** at The University of Texas at Austin — Spring 2023
  Quantum Mechanics I (PHY 373, Unique number: 57005)
  Instructor: Prof. Onyisi
- **Teaching Assistant** at The University of Texas at Austin — Spring 2023
  Modern Physics and Thermodynamics (PHY 355, Unique number: 56965)
  Instructor: Prof. Raizen
- **Teaching Assistant (Grader)** at The University of Texas at Austin — Fall 2022
  Modern Physics and Introduction to Thermodynamics (PHY 355, Unique number: 57430)
  Instructor: Prof. Onyisi

Languages

- **Mandarin Chinese:** Native or bilingual proficiency
- **English:** Professional working proficiency

Last updated on August 12, 2025