Xiaowen Zhang

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EDUCATION

- **Carnegie Mellon University**
  Ph.D. in Physics
  Sep. 2021 -
  Pittsburgh, USA

- **ShanghaiTech University**
  B.S. in Physics
  Sep. 2016 - June. 2020
  Shanghai, China

- **University of California, Berkeley**
  Visiting Student
  Aug. 2018 - May. 2019
  Berkeley, USA

RESEARCH INTERESTS

- **Cosmological simulations:** large-scale structures, hydrodynamic simulations
- **Deep Learning:** deep generative model, graph neural network, diffusion model

RESEARCH EXPERIENCE

- **McWilliams Center for Cosmology & Astrophysics**
  Research Assistant
  Sep. 2021 -
  Carnegie Mellon University
  - Super-Resolution of Cosmological Simulation
  - Emulation of cosmological simulations
  - Learn to simulate universe with Graph Neural Network
  - AI Acceleration of Scientific Research

- **Institute of Mathematical Sciences**
  Research Assistant
  Aug. 2020 - Aug. 2021
  ShanghaiTech University
  - Topological Data Analysis
  - Manifold learning via curvature reconstruction
  - Tropical geometry and neural network

- **Claredon Laboratory**
  Research Program
  July 2019 - Sep. 2019
  Univerisity of Oxford

- **School of Physical Science and Technology**
  Research Assistant
  Sep.2017 - Sep.2019
  ShanghaiTech University

PUBLICATIONS

[1] **Xiaowen Zhang**, P. Lachance, Y. Ni, Y. li, R. Croft, T. Di Matteo, S.Bird, Y. Feng et al. (2024). **AI-assisted super-resolution cosmological simulations III: time evolution**. *Monthly Notices of the Royal Astronomical Society*, Vol. 528, Issue 1, Pages 281–293

[2] **Xiaowen Zhang**, P. Lachance, A. Dasgupta, R. Croft, T. Di Matteo, Y.Ni, S.Bird, Y. li. (2024). **AI-assisted super-resolution cosmological simulations IV: An emulator for deterministic realizations**. *arXiv e-prints*

STUDENT MENTORING

- **Ankita Dasgupta (Physics undergraduate, Penn State)**
  An Emulator for super resolution simulations
  May. 2023 - Aug. 2024
- **Fatemeh Hafezianzadeh (Graduate students, CMU)**
  Lyman-alpha Forest Simulations
  Sep. 2024 -

TEACHING EXPERIENCE

- 33-341 Thermal Physics I
- 33-152 Matter and Interaction II
- 33-231 Physical Analysis
- 33-142 Physics II for Engineering and Physics Students
- 33-122 Physics II for Biological Sciences and Chemistry Students

HONORS AND AWARDS

- **Scholarship of Academic Excellence**
  ShanghaiTech University
  2017
- **Dean's Scholarship**
  ShanghaiTech University
  2016