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Education

B.S. in Physics, Fudan University, China 09/2019 - 07/2021 (Expected)

- GPA 3.80, rank 6/103.
- Selected into Honored student program (top 10% admitted) each year.
- Relevant courses: Computational Physics, Solidstate Physics, (Advanced) Quantum Mechanics, C++ / Python Programming.

Pre-college Education, in Henan, China Born - 07/2019

~~Publications~~ Not yet. Wait and see.

Research Projects

Neural network potentials Shanghai AI Laboratory

Advisor: Dr. Han-Sen Zhong 09/2022 - Present

- Develop neural network-based exchange-correlation functionals for KS-DFT.
- Set up datasets containing volumetric V_{XC} with ρ labels of different chemical accuracies by PySCF, and reconstruct virtual fractional charge/spin samples by Wu-Yang method.
- Pretrain neural networks on volumetric rasterized data and then refine their weight concerning certain material properties.
- Deploy $V_{\mathrm{XC}}^{\mathrm{NN}}$ in SCF procedure for molecular dynamics simulations.

Reversible bialloy descriptor Fudan University

Advisor: Prof. Hongjun Xiang 02/2022 - Present

- Search for "good" descriptors of bialloy structures. Several reconstruction tests are performed on Fourier transformation coefficients and cluster expansion messages.
- Encode bialloy structures by GNN and build generative models by VAE. The NN is trained by joint learning, and is used for optimizing certain properties related to bialloy structure.

Pirani gauge teaching experiment Fudan University

Advisor: Prof. Yongkang Le 06/2021 - 08/2022

- Develop a Pirani gauge teaching experiment.
- Everything starts from zero, including circuit designing, SCM programming and PID tuning. Learned lots of techniques and lab skills.
- User instructions and lab handouts are available. The experiment will be open for undergraduate students soon.

Vacuum chamber and puck design Fudan University

Advisor: Prof. Yuanbo Zhang 09/2021 - 03/2022

- Design sample pucks and functional vacuum chambers for an ultra-low temperature & strong magnetic field dilution refrigerator.
- Design a tricky and robust mechanism for installing/removing the puck from the cold dock plate.

Course Projects

Invisible cloak 09/2021 - 12/2021

- Course project in *Electrodynamics I*. Advised by Prof. Lei Zhou.
- Design electromagnetic field controlling meta-materials based on transformation optics and conformal mapping.
- Correct scatter in conformal mapping approach by well-designed anisotropic meta-surface.
- Verify the above theoretical results by COMSOL FEA simulation.

Heisenberg model in nano particles 03/2021 - 06/2021

- Course project in *Statistical Physics I*, best two in all 13 projects.
- Research the behaviors of anisotropic Heisenberg model in nanomagnetic particles.
- Implement Monte Carlo Metropolis algorithm in C++. Use Python for automating simulations and data mining.

Drifting Speckles in laser spots 09/2019 - 08/2020

- Course project in *Basic Physics Modeling*, best two in all 17 projects.
- Research the properties of the laser speckle phenomenon, mainly about Fourier optics.
- Experiments, theoretical analysis, and computational simulations are conducted.

Skills

Second language: English. IELTS 7.0, CET6 617 (top 4% in undergraduates)
Programming Languages: Python (PyTorch, PySCF, NumPy, Pandas, etc.), Wolfram Language (my lecture video), C/C++, LaTeX, PowerShell, bash, microPython/C for SCMs.
Software: VS Code, Mathematica, COMSOL, LAMMPS, VESTA, SOLIDWORKS, Multisim, Arduino, Keil5, Origin, Mathcha Notebook, MikTeX, Overleaf, MS Office.

Honors & Prizes

National undergraduate scholarship (top scholarship, top 2% in Fudan)	2020, 2022
First class scholarship of Fudan University (top 5% in Fudan)	2021
Freshmen scholarship of Fudan University (for outstanding in CPhO 2018)	2019
First prize in National Undergraduate Physics Experiment Competition (rank first)	2021
Second prize in China Undergraduate Physics Tournament (CUPT)	2020
Second prize in China Physics Olympiad (CPhO, in high school)	2018
National top student project in basic science (top 10% in physics)	2020, 2021, 2022
Honored student in physics department (top 10% in physics)	2020, 2021, 2022

Interests

Academic: AI for science (epsecially for materials science and computational chemistry), solid state physics, quantum computing.
Sports: Badminton, swimming.
Musical: Accordion.