

# Bingbin Li

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## EDUCATION

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**Fudan University, Department of Physics**  
*Bachelor of Science in Physics*

Sept. 2020 - Jun. 2024 (expected)  
Overall GPA: 3.78 ; Ranking: 3/131 ; Major GPA: 3.88

## EXPERIENCE

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### Twisting and Stacking of 2D Materials

Oct. 2022 - May 2023

*Research Assistant*

Nanomaterials and Device Laboratory, Department of Physics, Fudan University

*Advisor: Prof. Faxian Xiu*

- Designed and assembled a system for the deterministic transfer of 2D materials
- Prepared high-quality mechanically exfoliated few-layer 2D materials (graphene, h-BN, etc.)
- Transferred and stacked samples to get twisted double bilayer graphene (TDBG) on silicon wafer
- Involved in the characterization of TDBG by Physical Property Measurement System (PPMS)

### Nonadiabatic Molecular Dynamics (NAMD) Calculation on Halide Perovskite

July 2023 - present

*Research Assistant*

Institute of Computational Physical Sciences, Fudan University

*Advisor: Prof. Weibin Chu*

- Performed *ab initio* calculation of lattice optimization, electronic properties and molecular dynamics of halide perovskite  $\text{MPbI}_3$  ( $M = \text{Cs}, \text{MA}, \text{FA}$ ) using VASP
- Studied photogenerated carrier dynamics in halide perovskites using nonadiabatic molecular dynamics (NAMD) with Hefei-NAMD
- Investigated electron and hole recombination towards native defects in halide perovskites. Rationalized defect tolerance in perovskite by the lattice anharmonicity.

## PROJECTS

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### Chemical Vapor Deposition (CVD) growth of $\text{Cd}_3\text{As}_2$

Jan. 2022

- Performed extensive growth of  $\text{Cd}_3\text{As}_2$  growth by CVD tube furnaces on Si/SiO<sub>2</sub> substrate
- Optimized the ambient condition for the growth of  $\text{Cd}_3\text{As}_2$  on Si/SiO<sub>2</sub> substrate

### Investigation into 2D Antiferromagnetic Heisenberg Model using DMQMC Method

Apr. 2022 - June 2022

- Calculated energy, staggered magnetization, correlation function, and other physical properties with HANDE-QMC

### Y-86 Simulator

Nov. 2022 - Dec. 2022

- Simulated a CPU with Y86 instructions (an instruction set architecture in *Computer Systems: A Programmer's Perspective*, also known as CSAPP)
- Presented the operation of the simulated CPU on the web using the Django frame in Python and implemented frontend-backend communication

### Degenerate Electron Gas and Superconductivity with Spin Polarization

May 2023 - June 2023

- Derived the order parameter and the self-consistent equation of the finite center-of-mass momentum pairing state (also known as the FFLO state) using Bogoliubov transformation under mean-field approximation
- Explained the difference between the BCS state and the FFLO state in Cooper pairing

## SELECTED HONORS AND AWARDS

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| • Second Prize of the Scholarship for Outstanding Students at Fudan University (Top 10%)       | Dec. 2023 |
| • Honors Student Award in Physics in National Top Talent Undergraduate Training Program, Fudan | June 2023 |
| • Second Prize of the Scholarship for Outstanding Students at Fudan University (Top 10%)       | Dec. 2022 |
| • Honors Student Award in Physics in National Strengthening Basic Disciplines Training Program | May 2022  |
| • Undergraduate Major Scholarship, Fudan University  | Oct. 2022 |
| • Huawei Scholarship at Fudan University (the First Prize) (Top 5%)                            | Dec. 2021 |
| • Honors Student Award in Physics in National Strengthening Basic Disciplines Training Program | May 2021  |

## SKILLS

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- **Programming:** C/C++; Python; LabVIEW; HTML; CSS; JavaScript
- **Software:** VASP; OriginLab; Mathematica; Zemax