

# Xiaodong Hu

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## Education

**University of Washington**  
2024-present

Postdoc Scholar

**Boston College**  
2018-2024

Ph.D in Condensed Matter Theory  
Advisor: Ying Ran

**University of Science and Technology of China**  
2014-2018

B.S. in Theoretical Physics

## Publications/Preprints

- Xiaodong Hu, Ying Ran, and Di Xiao, Composite Fermion Theory of Fractional Chern Insulator Stability, arXiv:2508.03915 (2025)
- Xiaodong Hu, Di Xiao, and Ying Ran, *Hyperdeterminants and Composite Fermion States in Fractional Chern Insulators*, Phys. Rev. B **109**, 245125 (2024, Editor's Suggestion)
- Xiaodong Hu, J-H. Han, and Ying Ran, *Supercurrent-induced anomalous thermal Hall effect as a new probe to superconducting gap anisotropy*, Phys. Rev. B **108**, L041106 (2023)
- Xiaodong Hu, and Ying Ran, *Engineering chiral topological superconductivity in twisted Ising superconductors*, Phys. Rev. B **106**, 125136 (2022)
- Xiaoyang Shen, Chonghao Wang, Xiaodong Hu, Ruiping Guo, Hong Yao, Chong Wang, Wenhui Duan, and Yong Xu, Magnetorotons in Moiré Fractional Chern Insulators, arXiv:2412.01211 (2024)
- Yiping Wang, Jeongheon Choe, Eric Anderson, Weijie Li, Julian Ingham, Eric A Arsenault, Yiliu Li, Xiaodong Hu, Takashi Taniguchi, Kenji Watanabe, Xavier Roy, Dmitri Basov, Di Xiao, Raquel Queiroz, James C Hone, Xiaodong Xu, and X-Y Zhu, Hidden states and dynamics of fractional fillings in twisted MoTe<sub>2</sub> bilayers, Nature **641**, 1149-1155 (2025)
- Faranak Bahrami, Xiaodong Hu, Yonghua Du, Oleg I Lebedev, Chennan Wang, Hubertus Luetkens, Gilberto Fabbris, Michael J Graf, Daniel Haskel, Ying Ran, and Fazel Tafti, *First demonstration of tuning between the Kitaev and Ising limits in a honeycomb lattice*, Sci. Adv. **8**, eabl5671 (2022)
- Piyush Sakrikar, Bin Shen, Eduardo HT Poldi, Faranak Bahrami, Xiaodong Hu, Eric M Kenney, Qiaochu Wang, Kyle W Fruhling, Chennan Wang, Ritu Gupta, Rustem Khasanov, Hubertus Luetkens, Stuart A Calder, Adam A Aczel, Gilberto Fabbris, Russell J Hemley, Kemp W Plumb, Ying Ran, Philipp Gegenwart, Alexander A Tsirlin, Daniel Haskel, Michael J Graf, Fazel Tafti, Pressure tuning of competing interactions on a honeycomb lattice, Nat. Comm., **16**, 4712 (2025)

## Presentations

- *A Unified Mean-field Understanding of Fractional Chern Insulator Stability*, Talk, APS Global Summit, 2026
- *Composite Fermion Understanding of Geometry Conditions for Fractional Chern Insulators*, Talk, APS Global Summit, 2025
- *Projective Construction of Fractional Chern Insulators*, Talk, APS March Meeting, 2024

- *Engineering Chiral Topological Superconductivity in Twisted Ising Superconductors*, Talk, APS March Meeting, 2023
- *Supercurrent-induced anomalous thermal Hall effect as a new probe to superconducting gap anisotropy*, Talk, online APS March Meeting, 2023

## Techniques

Programming Languages    Julia, Rust, Python, Modern C++, Mathematica.  
DFT Tools                 Quantum Espresso, ELK

## Teaching Experiences

During my PhD time at Boston College, I have served as a Teaching Assistant for several graduate courses, including Classical Mechanics, Electrodynamics, Quantum Mechanics I/II, Statistical Mechanics I/II, Solid State Physics I, and Particle Physics. In the summer term of 2023, I also served as an instructor for an undergraduate course, Introduction to Physics I/II.

Last updated: January 4, 2026