ZIJIA CHENG

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EDUCATION

Princeton University, Princeton, NJ 2018 - expected 2024
Phd student of Science in Physics
Key courses: Financial Econometrics, Machine Learn & Pattern Recognition, Quantitative Data Analysis in Finance. Game theory. Natural Language Programming with Deep Learning.

Tsinghua University, Bejing, China. 2014 - 2018
Bachelor of Science in Physics (Tsinghua Xuetang Talents Program, top 20%)

RESEARCH

Laboratory for Topological Quantum Matter and Advanced Spectroscopy 2018 - Present
Research Assistant *Princeton, NJ*

- Adopted state-of-the-art **angular-resolved photoemission spectroscopy** (ARPES) and **scanning tunneling spectroscopy** (STM) techniques to discover novel strong-correlated topological materials, including Weyl line/loop state and high-order fermions, and characterize their electronic structures.
- Constructed the **tight-binding** and **mean-field models** for analyzing materials' band structure. Developed **Python-based numerical framework** for simulating spectrum function and calculating response functions based on the Hamiltonian.
- Developed and maintained **Python-based data acquisition and analysis tools**, significantly improving the work efficiency (>50%) of the group members and coworkers at national labs.
- Published over 15 peer-reviewed papers in high-profile journals (***Nature***, ***Phys. Rev. Let.***, ***Adv. Mat.***), with more than 1000 citations (Link).

The State Key Laboratory of Low-Dimensional Quantum Physics. 2015 - 2018
Undergraduate Research Assistant *Beijing, CN*

- Adopted machine learning method (Including SVM and neural network) and self-developed instrument control software (LabView-based) to develop an automatic workflow for calibrating the tip of the STM without supervision. Related patent: Link .
- Analyzed the universal scaling behavior of quantum anomalous hall systems using nonlinear fitting and Bootstrap method with Python. (Link)

COMPUTER SKILLS

Programming: Python/Igor Pro/Mathematica/C/LabView/R/Latex/Markdown. GitHub: (Link)
Packages: NumPy, Pandas, Matplotlib, SciPy, Sklearn, Numba, Pytorch, Trax
Toolkit: Git, Docker, mySQL, Linux Terminal

HONORS AND AWARDS

- Tsinghua Xuetang Talents Program Scholarship 2014-2018
- Hengda Scholarship for the top students in Department of Physics 2016-2017
- Academic Excellence Scholarship 2015-2016

ACADEMIC AND TEACHING ACTIVITIES

- Three conference talks (Link) and session chair of 2022, 2023 APS march meeting.
- Journal referee for **Physical Review Letters**, **Advanced Materials**, Physics Review B, Physics Review Materials, Physica B: Condensed Matter
- Teaching Assistant for General Physics I and II for over two semesters.