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Yiming Sun

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EDUCATION

Undergraduate, Condensed Matter Physics (Major), Computer Science (Minor), University of Science and Technology of China (USTC) 2020. 9 — Present

Honored Program, School of Physical Sciences

Major GPA: 4.12/4.30 (94.07/100) Minor GPA: 3.74/4.30 (89.26/100)

Ranking: 1/83 in Condensed Matter Physics, 2/310 in School of Physical Sciences

RESEARCH EXPERIENCE

Scanning Tunneling Spectroscopy on Quantum Materials 2022. 1 — Present
Supervisor: Prof. Zhenyu Wang (USTC)

- Imaged direct competition of superconductivity and charge density wave order parameters in momentum space in kagome superconductor CsV_3Sb_5 from STM and ARPES measurements
- Computed quasiparticle interference in normal state and proposed superconducting state CsV_3Sb_5 from tight-binding Hamiltonians, with different pairing symmetry and proximity, and chemical potential dependent density of states
- Phase analysis and determination from topological evidence in 3D quantum spin Hall insulator $\alpha\text{-Bi}_4\text{I}_4$
- Constructed practical single-axis strain device for quantum materials for transport and STM chamber measurement
- Made higher order modification for strain field subtraction from distorted STM topographs beyond Lawler-Fujita Algorithm

Detecting Light-induced Electrical Reaction of 2D Devices 2022. 9 — 2023. 1
Supervisor: Prof. Hualing Zeng (USTC)

- Constructed asymmetric WSe_2 , ReS_2 PN junction photodetectors, applied light through confocal microscope, and analysed wavelength and gate voltage dependent current response

Quantum Phase Tuning in Semiconductor Moire Superlattices 2023. 7 — Present
Supervisor: Profs. Kin Fai Mak & Jie Shan (Cornell University)

- Developed machine-learning-based clustering algorithm and instruments for automatic thickness clarification of multi-chip mechanically exfoliated 2D materials
- Precise manipulation of ball lens with high numerical aperture on twisted TMD devices for achieving enhanced optical spatial resolution and edge state imaging
- Exploration of emerging topological quantum phases through gate tuning in twisted bilayer or trilayer MoTe_2 devices for transport and optical measurement

PUBLICATIONS

Yiming Sun[#], Yubing Tu[#], Yang Luo[#], Shuikang Yu, Hongyu Li, Yunmei Zhang, Ping Wu, Zhuying Wang, Wanru Ma, Zuowei Liang, Jianjun Ying, Tao Wu, Ziji Xiang, Junfeng He^{*}, Lei Shan^{*}, Zhenyu Wang^{*}, and Xianhui Chen^{*}, Imaging momentum-space Cooper pair formation and its competition with charge density wave gap in kagome superconductor (2023). under review of *Science China Physics, Mechanics & Astronomy*

Shuikang Yu[#], Junze Deng[#], Wenhao Liu[#], Yunmei Zhang, **Yiming Sun**, Nikhil Dhale, Sheng Li, Wanru Ma, Zhuying Wang, Ping Wu, Zuowei Liang, Xuecheng Zhang, Bing Lv^{*}, Zhijun Wang^{*}, Zhenyu Wang^{*}, and Xianhui Chen^{*}, **Evidence for robust one-dimensional helical edge channels in a three-dimensional quantum spin Hall insulator** (2023). under review of *Physical Review X*

SKILLS

Programming	Python, C/C++, MATLAB, Mathematica, Verilog, Assembly, Java
Software	COMSOL Multiphysics, Solidworks
English	TOEFL iBT 101 (Speaking: 23)

SELECTED HONORS

National Scholarship (top 1%)	2021
Outstanding Freshman Scholarship (Gold)	2020
Electromagnetic Thesis Competition (1st Prize)	2021
China National Petroleum Corporation Scholarship	2022
Scholarship for Yan Jici Talent Program in Physics (Grade A)	2021-2023

TEACHING EXPERIENCE

Teaching Assistant, Thermodynamics and Statistical Physics A Spring, 2023
Lecturer: Prof. Zhenyu Wang (USTC)