Kaiming Liu

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EDUCATION

University of Illinois Urbana-Champaign (UIUC), Urbana, IL
Ph.D. in Physics, *Adviser*: Prof. Vidya Madhavan — Aug 2023 - Present

Xi'an Jiaotong University (XJTU), Xi'an, P.R. China
B.S. in Physics (Honors) — Sept 2019 – Jul 2023

The University of California, Berkeley (UCB), CA, US
The Berkeley Physics International Education (BPIE) Program — Aug 2021 – Dec 2021

Xi'an Jiaotong University (XJTU), Xi'an, P.R. China
The Special Class for the Gifted Young — Sept 2017 – Jul 2019

RESEARCH EXPERIENCE

University of Illinois Urbana-Champaign, Urbana, IL
Research Assistant, Prof. Vidya Madhavan's Group — Aug 2023 – Present

Project 1: Fe(Se,Te)/Bi_2Te_3 Heterostructures
• Grew and characterized monolayer Fe(Se,Te)/Bi_2Te_3 heterostructures via MBE.
• Investigated topological superconductivity and proximity effects using STM.

Project 2: MnTe/Bi_2Te_3 Heterostructures
• Grew and characterized MnTe/Bi_2Te_3 heterostructures via MBE.
• Studied alternatemagnetism using STM.

Project 3: K_3C_{60} Thin Films
• Grew potassium-doped C_{60} thin films on FeTe via MBE and confirmed superconducting gap using STM.
• Tuned doping level and characterized electronic properties to study potential light-induced superconductivity.

Project 4: CrSb/$CrTe_2$/FeTe Heterostructures on STO(100)
• Designed and initiated the growth of CrSb/$CrTe_2$/FeTe heterostructures using MBE.
• Developed custom substrate preparation methods and coordinated with collaborators for recipe optimization.

Xi'an Jiaotong University, Xi'an, P.R. China
Research Assistant, Prof. Yongchang Zhang's Group — Mar 2022 – Jul 2023
Project: Rydberg atomic system and quantum nonlinear optics
• Simulated Rydberg atoms and photon-mediated interactions using MATLAB and Python.
• Investigated quantum nonlinear optics in cold atom systems.

The University of California, Berkeley, CA, US
Research Assistant, Prof. Michael F. Crommie's Group Oct 2021 – Dec 2021
• Assisted in synthesizing five-membered rings and graphene nanoribbons.
• Investigated the impact of cyclopentadienyl rings on zero-mode electronic states using STM.

TEACHING EXPERIENCE

University of Illinois Urbana-Champaign, Urbana, IL
Teaching Assistant for PHYS 102 - College Physics: EM Modern Aug 2023 – Dec 2023
• Assisted in the delivery of lectures and laboratory sessions for a class of undergraduate students.
• Graded assignments, quizzes, and exams, providing feedback on student performance.
• Held weekly office hours to support students in understanding course material.
• Facilitated group discussions and problem-solving sessions, helping students apply concepts in electromagnetism and modern physics.

AWARDS

2021 China National Scholarship, XJTU

2021 Everest Scholarship, XJTU

2021 Mathematical Contest in Modeling, Meritorious Winner

2020 Everest Scholarship, XJTU

SKILLS

Technical Skills: STM, MBE, AFM, XRD, SEM, Python, MATLAB

Nontechnical Skills: Rubik's Cube Speedcubing