Kaiming Liu

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EDUCATION

University of Illinois Urbana-Champaign (UIUC), Urbana, IL
Ph.D. in Physics — Aug 2023 – Present

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

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

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

SKILLS

Programming: Python (NumPy, Pandas, SciPy), MATLAB; Git/GitHub; Linux/bash; basic SQL; Jupyter; matplotlib; scripting & automation; vectorization/broadcasting; packaging basics; unit testing (pytest); documentation (Markdown/README).
Math/Stats: Linear algebra, calculus, probability & statistics; numerical least squares; basic optimization (gradient descent).
Lab/Instrumentation: STM, MBE (automation & control), AFM, XRD, SEM.

RESEARCH EXPERIENCE

University of Illinois Urbana-Champaign, Urbana, IL — Aug 2023 – Present
Research Assistant

- Built an **automated temperature-control program** for MBE growth (PID loops, logging/alerts), improving run stability and repeatability.
- Developed **STM data-analysis and plotting** scripts (Python/MATLAB); standardized pipelines for preprocessing and figure generation.
- Extracted **constant-energy contours (CEC)** from QPI/STS data to compute **JDOS** in an altermagnetism study.
- Designed and executed thin-film growth experiments (MBE); coordinated substrate preparation and recipe tuning.

Xi'an Jiaotong University, Xi'an, P.R. China — Mar 2022 – Jul 2023
Research Assistant, Prof. Yongchang Zhang's Group

- Simulated Rydberg atoms and photon-mediated interactions using MATLAB/Python; numerical experiments for many-body effects.

University of California, Berkeley, Berkeley, CA — Oct 2021 – Dec 2021
Research Assistant, Prof. Michael F. Crommie's Group

- Assisted in synthesizing five-membered rings and graphene nanoribbons; supported data collection and preprocessing.

COURSEWORK & PREPARATION

Current (Fall 2025): PHYS 503 Machine Learning for Physics; MATH 564 Applied Stochastic Processes.
Interview prep: LeetCode 75 and 150 (in progress).
Planned (Spring 2026): CS 446/ECE 449 Machine Learning (4 cr); ECE 490 Optimization (or IE 521); STAT 429 Time Series Analysis; STAT 432 Statistical Learning; FIN 554/556 (as available).
Timeline: On track to complete these before **Summer 2026 internships**, so skills will be in place by recruiting time.

TEACHING EXPERIENCE

University of Illinois Urbana-Champaign, Urbana, IL Aug 2023 – Dec 2023
Teaching Assistant for PHYS 102 – College Physics: E&M & Modern

- Led discussion/lab sections; held weekly office hours; graded assignments and provided feedback.
- Facilitated problem-solving sessions to support understanding of electromagnetism and modern physics.

AWARDS

China National Scholarship (2021); Everest Scholarship (2020, 2021); MCM Meritorious Winner (2021).