

Kaiming Liu

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EDUCATION

Xi'an Jiaotong University (XJTU) | Xi'an, P.R.China

Sept 2017 – Jul 2019

School of Gifted Young

Sept 2019 – Jul 2023 (*expected*)

Bachelor of Science in Physics (Honors Science Program)

GPA: 3.89 / 4.3 (3.77 / 4.0) | In-major GPA: 3.93 / 4.3 (3.80 / 4.0) | Average score: 90.46 / 100

Ranking: 2nd / 49 (Honors Science Program); 2nd/200 (School of Physics)

Core Courses:

Calculus-2 (95/100)

Optics (95/100)

Probability Theory (96/100)

Atomic Physics (97/100)

Thermal Physics (98/100)

Basic Physical Experiment (98/100)

Contemporary Physics Experiment (98/100)

Methods of Mathematical Physics (91/100)

The University of California, Berkeley (UCB) | California, United States

Aug 2021 – Dec 2021

Berkeley Physics International Education (BPIE) Program

GPA: 4.0 / 4.0 | Grade Level: A

Core Courses:

Quantum Mechanics (A+)

Introduction to Statistical and Thermal Physics (A)

Introduction to Computational Techniques in Physics (A)

SCHOLARSHIP & AWARDS

2018 China Undergraduate Physics Tournament XJTU Selection Competition (*The Frist Price, 5%*)

2019 China Undergraduate Physics Tournament Northwest Division (*The First Prize, 1%*)

2019 China Undergraduate Physics Tournament Finals (*Grand Price, Top four teams of China, < 0.1%*)

2020 Mathematical Contest in Modeling in China, Shannxi Division (*The First Prize, 1%*)

2020 Xi'an Jiaotong Academic Scholarship (*Awarded to undergraduates with great performance in research*)

2021 Mathematical Contest in Modeling (*Meritorious Winner, Top 7% of 20,000 teams worldwide*)

2020, 2021 Everest Scholarship, Xi'an Jiaotong University (*Highest Honor in the School of Physics, 1%*)

2021 National Scholarship (*Highest scholarship awarded by the Chinese government, <0.1%*)

PUBLICATIONS & MANUSCRIPTS

- 1 **Kaiming Liu**, Yajie Zhou, Shumin Zhao, Hongli Wang. Fluid suspension and its stability[J]. *Physics Experimentation*, 2021, 41(03): 46-53+58. DOI:10.19655/j.cnki.1005-4642.2021.03.010.
- 2 Peter H. Jacobse†‖#, Michael C. Daugherty‡#, Kristiāns Čerņevičs§^#, Ziyi Wang†‖, Ryan D. McCurdy ‡, Reis Dorit‡, **Kaiming Liu**†, Jiaming Lu†, Oleg V. Yazyev§^*, Felix R. Fischer‡‖∇*, Michael F. Crommie†‖∇*. Decoupling localized modes in nanographenes. Manuscript in preparation.

RESEARCH EXPERIENCE

The University of California, Berkeley | CA, U.S

Crommie's Group, Department of Physics

Oct 2021 – Dec 2021

Research Assistant, Advisors: Prof. Michael Crommie, Dr. Peter Jacobse & Graduate student Ziyi Wang

Project 1: "Daisy Chain" on Au(111) surface

Description: Studied the behavior of the magnetic ground state of dibenzoquateranthene (DBQA) on a gold surface with scanning tunneling microscopy (STM).

- I learned to use Matrix-Assisted Direct (MAD) Transfer and Bottom-Up Approach to achieve an on-surface synthesis of poly-DBQA from precursor iodophenyl-bromobianthryl (PBA).
- With the help of Ziyi and Peter, I mastered many experimental skills of Scanning Probe Measurements, such as annealing, sputtering, transferring samples, refilling liquid Helium and Liquid Nitrogen
- I learned to use software to control STM to get topographic images of poly-DBQA chains on the nanometer scale. ("Daisy Chain")

Project 2: Five-fold structure on Au(111) surface

Description: Proposed a method for synthesizing five-fold structures on a gold surface.

- I learned to use the Evaporation method and Bottom-Up approach to synthesize five-fold structures from five-membered ring molecules.
- I collaborated with Ziyi to get topographic images of five-point star structures by STM.

Project 3: Single strands of deoxyribonucleic acid (DNA) on Au(111) surface

Description: Studied the behavior and structure of single strands of DNA on a gold surface with STM.

- I finished MAD Transfer independently to achieve the on-surface synthesis of single strands of DNA.
- I collaborated with Peter to get topographic images of single strands of DNA by STM.

Xi'an Jiaotong University | Xi'an, P.R.China

Q_MQ_IC_A Group, School of Physics

Mar 2022 – Nov 2022

Research Assistant, Advisors: Prof. Yongchang Zhang & Graduate student Rong Ma

Project 1: Rydberg atoms and Quantum Information

Description Proposed a method for achieving qubit by taking advantage of the long life span of Rydberg atoms.

- I used the Heisenberg Equation and Group Operators for deducing the Hamiltonian matrix of the Rydberg-Atomic System.
- I used MATLAB to solve eigenvalues and eigenstates of the Hamiltonian matrix showing the expression of dark-state polariton.
- I achieved numerical simulation of Gaussian beam and Gaussian wave packets in the Rydberg atomic system under dark state polariton conditions.

LANGUAGE SKILLS

TOEFL iBT 108/120 (Reading 28, Listening 26, Speaking 25, Writing 29)