Kaiming Liu

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EDUCATION

Xi'an Jiaotong University (XJTU) | Xi'an, P.R.China
School of Gifted Young *Sept 2017 – Jul 2019*
Core Courses

- High School Courses (2017 - 2018) + University Introduction Courses (2018 - 2019)

Bachelor of Science in Physics **(Honors Science Program)** *Sept 2019 – Jul 2023 (expected)*

- **GPA: 3.89 / 4.3 (3.77 / 4.0) | Average score: 90.46 / 100 | Ranking: 2nd / 49 (Honors Science Program)**
- **In-major GPA: 3.93 / 4.3 (3.80 / 4.0)**

Core Courses

- **Mathematics & Physics:** Calculus-2 (95/100), Thermal Physics (98/100), Atomic Physics (97/100), Probability Theory (96/100), Optics (95/100), 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
Berkeley Physics International Education (BPIE) Program *Aug 2021 – Dec 2021*

- **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, Awarded to 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 academic research)
- **2021 Mathematical Contest in Modeling** (Meritorious Winner, Top **7%** of the **20,000 teams** worldwide)
- **2020, 2021 Top Program Everest Scholarship, Xi'an Jiaotong University** (Highest Honor in the Dept. 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 INTEREST

Fields Microphysics, 2D materials, Graphene nanoribbons (GNRs), Scanning Probe Microscopy (SPM)

Methods STM, AFM, Matrix-Assisted Direct (MAD) Transfer, Bottom-Up approach, On-surface synthesis

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: "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).

- Applied Matrix-Assisted Direct (MAD) Transfer and Bottom-Up Approach to achieve an on-surface synthesis of poly-DBQA from precursor iodophenyl-bromobianthryl (PBA).
- Achieved STM topographic image showing self-assembly of PBA as deposited on Au(111).
- Achieved STM topographic image showing a poly-DBQA chain. ("Daisy Chain")
- Perform Differential conductance maps recorded on the poly-DBQA showing bond structure and Kondo effect of the poly-DBQA chain.

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

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

- Applied the Evaporation method and Bottom-Up approach to synthesize five-fold structures from five-memberd ring molecules.
- Achieved STM topographic image showing five-point star structures.

Project: 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.

- Applied MAD Transfer and the annealing method to achieve on-surface synthesis of single strands of DNA.
- Achieved STM topographic image showing single strands of DNA.
- Performed STM manipulation experiment on a single strand of DNA

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

Condensed Matter Theory Group, Department of Physics *Mar 2022 – Nov 2022*

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

Project: Rydberg atoms and Quantum Information

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

- Applied Heisenberg Equation and Group Operators for deducing the Hamiltonian matrix of the Rydberg-Atomic System.
- Solved eigenvalues and eigenstates of the Hamiltonian matrix showing the expression of dark-state polariton.
- 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)