Jacob H. Nie

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Personal Information

Personal email: jacobnie2008@gmail.com (preferred)
School email: jacobhnie@ucsb.edu
Current residence: Santa Barbara, CA
Age: 20

Education

University of California, Santa Barbara

B. S., Physics, 2020–2023 (expected)

GPA: 3.98/4.00

Experience

Undergraduate researcher, UC Santa Barbara (September 2022–Present)

PI: *Prof. Galan Moody*

Research focus: Fabricating and characterizing single photon emitters in hexagonal boron nitride and studying their coupling to surface acoustic waves.

Undergraduate researcher, UC Santa Barbara (April 2021–Present)

PI: *Prof. Chenhao Jin*

Research focus: Optical spectroscopy of quantum phases of strongly correlated excitons optically generated in WSe2/WS2 heterostructures; transport and optical characterization of strongly correlated and topological phases of electrons in MoTe2/WSe2 heterostructures (in collaboration with Prof. Andrea Young); transport and pump-probe spectroscopy of twisted WSe2 heterostructures.

Visiting student, UC Berkeley (June 2021–September 2021)

PI: *Prof. Feng Wang*

Research focus: Fabricating 2D van der Waals heterostructures, and optical spectroscopy of twisted TMD heterostructures.

Selected Honors

Worster Summer Research Fellowship (2022)

Barry Goldwater Scholarship: nominee (2022)

USA Physics Olympiad National Team Training Camp Attendee (2019)

USA Physics Olympiad: Gold Medalist (2019)

PUBLICATIONS

A. Rossi, J. Zipfel, I. Maity, M. Lorenzon, L. Francaviglia, E. C. Regan, Z. Zhang, **J. H. Nie**, E. Barnard, K. Watanabe, T. Taniguchi, E. Rotenberg, F. Wang, J. Lischner, A. Raja, A. Weber-Bargioni. Phason-mediated interlayer exciton diffusion in WS2/WSe2 moiré heterostructure. *arXiv:2301.07750* (2023)

R. Xiong, **J. H. Nie**, S. B. Brantly, P. Hays, R. Sailus, K. Watanabe, T. Taniguchi, S. Tongay, C. Jin. Bosonic Mott insulator in WSe2/WS2 moiré superlattice. *arXiv:2207.10764* (2022)

PRESENTATIONS

Simulating the Bose-Hubbard model in semiconductor moiré superlattices. Worster Fellowship Symposium. (Oct. 2022)

SELECTED COURSEWORK

PHYS 13A,B,C - Honors Experimental Physics (A, A, A-)

PHYS 101 - Complex Variables (A+)

PHYS 104 - Advanced Mechanics (A+)

PHYS 110A - Electromagnetism (A+)

PHYS 123B - Topics in Condensed Matter Physics (A+)

PHYS 215A,B,C - Quantum Mechanics* (A+, A+, A+)

PHYS 223A - Condensed Matter Physics* (A+)

ECE 162C - Optoelectronic Materials and Devices (A+)

** Graduate course*