

Jaden He

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Education

University of Maryland, College Park

2022 - Present

- *Double Major: Physics and Piano Performance - Class of 2026*
- Intended Mathematics Major
- Science, Technology, and Society (STS) Scholars Program

Richard Montgomery High School

2018 - 2022

- International Baccalaureate Magnet Program

Relevant Experience

Undergraduate Researcher

Fall 2022 - Present

- Research position with Professor Nathan Schine in AMO Physics.
- Tasks: Test focal length of lenses, build computers, work with electrical equipment (DC and AC power supply, Oscilloscope, various wires and connectors), theoretical analysis of circuitry, analysis of decay of eddy currents.
- Analysis of magnetic fields in bias and MOT coils in neutral atom trap, design and build circuits in KiCad.
- Learn and read about lasers and optical physics, including ray optics and ray matrices, Gaussian beams, resonators.

Research Projects

Spring 2022 - Present

- *Experimentation and Analysis of Double Pendulums (Spring 2022):*
 - Used Matlab to simulate double pendulums then compared simulation to experiment.
- *Analysis of Sound Waves with the Fourier Series (Spring 2022):*
 - Used measuring devices to capture sound waves, then analyze them with the Fourier Series.
- *An Elementary Overview of the University of Maryland Electron Ring (UMER) (Fall 2022):*
 - Consulted with professors leading the UMER team and presented my research in front of peers.

Coding Projects

- PDF Converter - Saved time by coding a macro to retrieve online textbooks.
- Physics Simulation - Coded physics animations of physical systems, use of Matplotlib and Pygame.
- Conway's Game of Life - Created Game of Life in Python with Pygame.

Self-Study

- The Feynman Lectures on Physics by Matthew Sands and Richard Feynman
- Practical Electronics for Inventors by Paul Scherz and Simon Monk
- Introduction to Modern Optics by Grant R. Fowles (Present)
- Fluid Mechanics in the future

Events

Workshops

- QxQ Quantum Winter School (2/4/2023 - 2/5/2023, 2/11/2023 - 2/12/2023)
- CQN Winter School on Quantum Networks (1/2/2023 - 1/6/2023)
- UMD Vortex Makerspace Python Workshop (10/19/2022)

Colloquiums

- Attender of physics colloquiums.

Outreach

- UMD Discovery Days: Hot & Cold Volunteer (2/25/2023)
- UMD Physics is Phun: A Show of Ice and Fire Volunteer (2/3/2023 - 2/4/2023)

STEM Clubs

Society of Physics Students (SPS)

Fall 2022 - Present

- Various guest speakers, workshops, discussions. Attend weekly meetings..
- Tutor, four hours weekly. (Spring 2023 - Present)

UMD Undergraduate Quantum Association (UQA)

Fall 2022 - Present

- Learn and discuss quantum physics and quantum computing. Attend some meetings.

Awards

Fall 2022 Dean's List	January 2023
- University Academic Honors.	
International Baccalaureate Diploma	July 2022
- Awarded to IB candidates upon completion of the IB programme.	
Smith Music Scholarship	March 2022
- Awarded to outstanding musicians accepted to the University of Maryland School of Music.	
UMD Dean's Scholarship	February 2022
- Awarded to outstanding applications to the University of Maryland.	
AP Scholar with Distinction	Spring 2022
- Awarded to students with excellent performance on AP exams.	

STEM Courses

Credit by Exam	
- Calculus I, II, III	
- Linear Algebra	
- Physics Mechanics and Physics Electricity & Magnetism	
Fall 2022	
- CPSS100 - College Park Scholars: Science, Technology & Society First-Year Colloquium I	
- PHYS272H - Introductory Physics: Fields	
- PHYS274 - Mathematical Methods for Physics I	
Spring 2023	
- MATH410 - Advanced Calculus I	
- PHYS273 - Introductory Physics: Waves	
- PHYS275 - Experimental Physics I: Mechanics and Heat	
- PHYS373 - Mathematical Methods for Physics II	
- PHYS420 - Principles of Modern Physics	

Volunteer and Leadership

Taiwanese Student Association (TASA) Planning Committee	Fall 2022
- Helped to organize and plan cultural events.	
Concessions	Fall 2022
- Involvement in UMD's Chinese Student Association (CSA) and Taiwanese Student Association (TASA).	
- Volunteered at concession stands at UMD football games to sell food and raise money.	
Science Technology and Society (STS) Scholars Program	Fall 2022
- Service Day - Helped a local organic and sustainable farm with farm work.	
- Tour of NASA - Toured NASA Goddard with STS students.	
Chess Club President	2021 - 2022
- Provided a place to play and improve at chess. Organized chess tournaments within club and against other schools.	
Various Volunteering Projects (Boy Scouts of America)	2015 - 2022
- Order of the Arrow ordeals, trail cleanup, bench building, mulch delivery, and yard work.	
Eagle Scout Project	2021
- Eagle Scout, organized a volunteer project to renovate and blaze a section of trail in Cabin John, MD for Eagle Project.	

Skills

Computer Skills
- Python, Java

- Matlab, LaTeX, KiCAD, LoggerPro, Mathematica, Anaconda, Microsoft Office, Git & Github (currently learning)

Laboratory Skills

- Experience with various tools, electronic parts, woodworking.
- Oscilloscope, AC and DC generator, inductors, resistors, capacitors.

Languages

- English (Proficient), Mandarin (Proficient), Spanish (Intermediate)

Hobbies

- Leetcode, Chess, Weightlifting, Tennis, Rubik's Cube.
- Low Commitment Clubs - Boxing Club, Table Tennis Club.