

Jacob Duffy

Curriculum Vitae

Email: jod0007@auburn.edu

GitHub: github.com/jduffy0121

Education

B.S. Physics , Minor: Mathematics Auburn University	2020 — Present
B.S. Computer Science , Certificate: Artificial Intelligence Engineering Auburn University	2020 — Present

Relevant Coursework

Physics	Solid State Physics, Optics, General Relativity, Mathematical Methods, Quantum Mechanics I/II, Electricity and Magnetism, Statistical Mechanics, Classical Mechanics, Analog Circuits
Computer Science	Artificial Intelligence, Machine Learning, Deep Learning, Evolutionary Computing, Data Mining, Algorithms, Discrete Structures
Mathematics/Statistics	Numerical Analysis I/II, Probability and Statistics I, Nonlinear Optimization

Work Experience

Ultrafast Nonlinear Optics Research Group Auburn University May 2024 — Present	<ul style="list-style-type: none">Focusing on the experimental measurements and simulations of second harmonic generation (SHG) which occurs when photons interact with a nonlinear crystal.Assisting in the development of a package to simulate and fit experimental SHG data for the electric dipole (ED), electric quadrupole (EQ), and magnetic dipole (MD) radiation sources.PI: Dr. Wencan Jin
Atomic, Molecular, and Optical Research Group Auburn University Feb 2022 — May 2024	<ul style="list-style-type: none">Simulated the radiative processes of photodissociation in a cometary atmosphere by using a new vectorial model.Created multiple user interfaces to run the vectorial model for comets containing primarily H₂O, CO₂, or HCN molecules.Assisted in the development of a package to determine H₂O production from UVOT images of comets taken by the Neil Gehrels Swift Observatory.PI: Dr. Dennis Bodewits
Housing Resident Assistant Auburn University Jul 2021 — May 2023	<ul style="list-style-type: none">Served as a resident assistant (RA) for college freshmen males.Planned programs for the residence hall and helped mitigate safety concerns as they arose.
Auburn University Small Satellite Program Auburn University Jan 2021 — Dec 2021	<ul style="list-style-type: none">Helped lead training on orbital simulations and worked on thermodynamic modeling of the CubeSats.Program Directors: Dr. Michael Fogle, Dr. JM Wersinger, and Dr. Mark Adams

Teaching Experience

PHYS 1610	Engineering Physics II	Spring 2024, Fall 2024	Auburn University	Teaching Assistant
PHYS 1600	Engineering Physics I	Fall 2023	Auburn University	Teaching Assistant

Honors and Awards

- | | |
|--------------------------------------|-------------|
| ▪ Undergraduate Research Fellowship | 2023 — 2024 |
| ▪ Most Outstanding Physics Sophomore | 2022 |

Scientific Organizations

- | | |
|---|-----------------------|
| ▪ Sigma Pi Sigma National Honor Society | 2022 — <i>Present</i> |
| ▪ Society of Physics Students (SPS) | 2020 — <i>Present</i> |