Collin Collins

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Education

Ohio University Athens, OH

Bachelor of Science in Physics, Minor in Mathematics (GPA: 3.98/4.00) *Aug 2021 – May 2025 (Expected)*

- Distinguished Professor Scholarship Recipient
- John E. Edwards Fellowship Recipient
- Dean's Scholarship Recipient
- Summa Cum Laude

Experience

Research Intern – Computational Condensed Matter Physics May 2023 – Present

Dr. Castillo Research Group, Ohio University *Athens, OH*

- Designed, implemented, and executed molecular dynamics simulations (LAMMPS) using high-performance computing (HPC) resources to model and analyze the behavior of supercooled liquids, investigating material properties relevant to glass formation.
- Developed Python scripts (Pandas, Matplotlib, NumPy, SciPy) to process and analyze terabyte-scale simulation datasets, measuring novel relaxation metrics and physical phenomena in molecular glass-formers.
- Contributed research results instrumental in securing a $235k NSF grant for my principal investigator.
- Communicated research findings through 8 presentations/posters at local and national venues, including an oral presentation at the 2025 APS Global Physics Summit and another at the 2024 APS EGLS conference.
- Gave an invited talk at the 2025 NQPI Seminar Series.
- Awarded 1st Place for research posters at the 2025 NQPI Research Session and the 2025 OU Student Research Expo.

Teaching Assistant Aug 2023 – Present

Department of Physics and Astronomy, Ohio University *Athens, OH*

- Led weekly lab sessions for Introduction to Physics (PHYS 2001), providing technical guidance on experimental procedures, data acquisition, and analysis; fostered practical problem-solving skills.
- Reinforced understanding of fundamental physics concepts (kinematics to kinetic theory) for General Physics I (PHYS 2054) by hosting weekly peer-led team learning (PLTL) sessions.

Supplemental Instruction Leader – Differential Equations Aug 2023 – Aug 2024

Mathematics Department, Ohio University *Athens, OH*

- Developed and delivered the Supplemental Instruction curriculum for MATH 3400 (Differential Equations).
- Authored 110+ pages of comprehensive problem sets and solutions using LaTeX, focusing on clear communication of mathematical logic and problem-solving techniques.
- Conducted biweekly group sessions teaching effective solution strategies for over 15 types of differential equations.

Research Intern – Computational Solid State Physics Mar 2024 – Aug 2024

Dr. Govorov Research Group, Ohio University *Athens, OH*

- Modeled and analyzed nonlinear charge carrier dynamics in semiconductor superlattices using MATLAB to understand and predict device behavior.

Records Assistant May 2017 – Aug 2019

Tropic Air *San Pedro, Belize*

- Managed and digitized two decades of aircraft parts and flight logs using an Aircraft Records Management System (ARMS), ensuring data integrity for a fleet of 16 aircraft.
- Ensured company compliance with Belize Department of Civil Aviation directives through meticulous record-keeping.

Skills

Programming Languages: Python (NumPy, Pandas, Matplotlib, SciPy), MATLAB, SQL, Java

Software & Tools: LaTeX, LAMMPS, Git, Linux/Unix Environment, HPC/Slurm, Microsoft Office Suite

Technical Skills: Computational Modeling & Simulation, Large-Scale Data Analysis & Visualization, Algorithm Development, Technical Writing & Documentation, Problem Solving, Data Management

Relevant Coursework

Physics:

- **Core Coursework:** General Physics I & II, Contemporary Physics, Classical Mechanics, Thermal Physics, Quantum Mechanics, E&M I
- **Elective Coursework:** Fundamentals of Astrophysics, Observational Astrophysics, Special Topics in Condensed Matter Research
- **Laboratory Coursework:** Electronics Lab, Electrons & Photons Lab, Photons & Nucleons Lab

Mathematics:

- Calculus I, II, III, Applied Linear Algebra, Differential Equations, Fourier Analysis & PDEs, Applied Numerical Methods