Collin Collins

Curriculum Vitae

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Education

Ohio University Aug 2021 – May 2025

Bachelor of Science in Physics, Minor in Mathematics *Athens, OH*

- GPA: 3.98/4.00

Industry Experience

Solutions Engineer May 2025 – Present

Aerial Surveys International *Watkins, CO*

- Led the proposal writing team and authored technical content for geospatial federal contracting opportunities
- Built and deployed a geospatial platform integrating real-time flight data, satellite imagery, and automated cost reporting for aerial survey operations

Research Experience

Research Intern – Computational Condensed Matter Physics May 2023 – Present

Dr. Horacio 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 to process and analyze terabyte-scale simulation datasets, measuring novel relaxation metrics and physical phenomena in molecular glass-formers

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

Dr. Alexander 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

Teaching Experience

Teaching Assistant Aug 2023 – May 2025

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
- Hosted weekly peer-led team learning (PLTL) sessions for General Physics I (PHYS 2054), reinforcing fundamental physics concepts from kinematics to kinetic theory

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 comprehensive problem and solution sets, focusing on clear communication of mathematical logic and problem-solving techniques
- Conducted biweekly group sessions teaching effective solution strategies for differential equations

Physics/Mathematics Peer Tutor Oct 2022 – Oct 2023

Alden Library, Ohio University *Athens, OH*

- Provided one-on-one instruction in Calculus I, II & III, General Physics I & II, Linear Algebra, and Differential Equations

Presentations

Invited Talks

Spring NQPI Seminar Series Feb 2025
Characterizing dynamical heterogeneity in a supercooled glass-forming diatomic liquid

Contributed Talks

ASPRS EGLR Technical Meeting Aug 2025
Machine learning applications in large-scale aerial surveying

APS Global Physics Summit Mar 2025
Characterizing dynamical heterogeneity in a supercooled glass-forming diatomic liquid

APS Eastern Great Lakes Section Meeting Oct 2024
Characterizing dynamical heterogeneity in a supercooled glass-forming diatomic liquid

Ohio University SPS Meeting Nov 2024
Characterizing dynamical heterogeneity in a supercooled glass-forming diatomic liquid

Poster Presentations

Ohio University Student Research Expo Apr 2025
Characterizing dynamical heterogeneity in a supercooled glass-forming diatomic liquid

NQPI Poster Session Apr 2025
Characterizing dynamical heterogeneity in a supercooled glass-forming diatomic liquid

Ohio University Student Research Expo Apr 2024
Analyzing rotational and translational dynamics of a supercooled liquid of diatomic molecules

NQPI Poster Session Apr 2024
Analyzing rotational and translational dynamics of a supercooled liquid of diatomic molecules

Publications

C. Collins, G. Matsumura, and H. Castillo. "Analyzing rotational and translational dynamics of a supercooled liquid of diatomic molecules"
In preparation

C. Collins, G. Matsumura, and H. Castillo. "Characterizing dynamical heterogeneity in a supercooled glass-forming diatomic liquid"
In preparation

Honors & Awards

Research Awards

1st Place, Ohio University Student Research Expo Apr 2025

1st Place, NQPI Poster Session Apr 2025

Scholarships & Fellowships

John E. Edwards Fellowship Fall 2023–Spring 2024

Distinguished Professor Scholarship Fall 2024–Spring 2025

Dean's Scholarship Fall 2024–Spring 2025

Academic Honors

Summa Cum Laude May 2025

President's List Spring 2023, Spring 2024, Fall 2024

Dean's List Fall 2021–Fall 2023, Spring 2025

Technical Skills

Programming & Markup Languages: Python, MATLAB, SQL, JavaScript, LaTeX

Simulation & Analysis: LAMMPS, Molecular Dynamics, Large-Scale Data Analysis & Visualization

Computing Environment: Linux/Unix, HPC/SLURM, Git

Relevant Coursework

Physics: Classical Mechanics, Quantum Mechanics, Electricity & Magnetism I–II, Thermal Physics, Electronics Lab, Electrons & Photons Lab, Photons & Nucleons Lab, Special Topics in Physics (Condensed Matter)

Mathematics: Calculus I–III, Linear Algebra, Differential Equations, Fourier Analysis & PDEs, Applied Numerical Methods