Nathan Girard

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Experienced scientist with a background in the physical sciences, software development and data analysis with over 5 years of experience in experiment planning and execution as well as over 10 years of experience in managing diverse teams stretched across multiple disciplines.

Research

Ultra-Cold Atomic Gases ***Boston, MA***

University of Massachusetts, Boston ***August, 2025 – Present***

Currently simulating ultracold atomic gases at low pressures to create fundamental models for experimental condensed matter physicists to base their experiments off. This research project is in the planning phase and the group is currently identifying experimental groups to partner with.

Ultra-Fast Transient Absorption Spectroscopies ***Providence, RI***

Rhode Island College ***September, 2019 – May, 2021***

Collaboration between Rhode Island College Young Physics lab, the University of Rhode Island Hayes Chemistry lab, Department of Energy solar photochemistry program and Argonne National Laboratory. Time-resolved Synchrotron radiation Mössbauer spectroscopy and X-ray transient absorption (EXAFS/NEXAFS) spectroscopy used to study ultra-fast photon-stimulated processes in various materials.

Work History

Graduate Student ***Boston, MA***

University of Massachusetts, Boston ***August, 2025 – Present***

- Designed lesson plans and oversaw lab sections pertaining to thermodynamics and electricity and magnetism
- Led weekly discussion course connecting theories between lecture and lab exercises
- Conducted theoretical, computational research on ultra-cold gases

Scientist/On-Site Supervisor ***Middletown, RI***

McLaughlin Research Corporation ***January, 2022 – Present***

- Designed and executed regression, sprint and system/safety level testing of Unmanned Underwater Vehicle (UUV) operational software
- Investigated and reported software bugs and tested new software features to ensure proper functionality of software was delivered to the United States Navy
- Created MATLAB analysis tools suites to streamline the analysis process and provided inter-departmental MATLAB tool support
- Managed staff of scientists and engineers across multiple branches supporting both in-water and simulated live-fire exercises and analysis

Physical Sciences Research Assistant ***Providence, RI***

Rhode Island College ***September, 2018 – May, 2021***

- Interdisciplinary team of chemists and physicists spanning multiple institutions, supported by the Department of Energy's solar photochemistry program
- Planned and conducted chemical synthesis of radioisotope enriched samples, characterized same with Mössbauer and ultrafast optical transient absorption spectroscopies at URI, then performed x-ray transient absorption spectroscopy (EXAFS/NEXAFS) at Argonne National Laboratory

Lead Supervisor ***Providence, RI***
Roger Williams Park Zoo ***April, 2013 – Present***

- Managed daily staffing, scheduling cash handling and administration across multiple sites with over 100 employees
- Directed daily operations and special project operations for events

Teaching Experience

Teaching Fellow ***Boston, MA***
University of Massachusetts, Boston ***August, 2025 – Present***

- Lab sections: PHYSIC 172
- Discussion sections: PHYSIC 108

Math Tutor ***Providence, RI***
Rhode Island College ***May, 2019 – December, 2019***

- Topics covered were Quantitative Business Analysis, Algebra, Pre-Calculus, Calculus I, Calculus II, and Calculus III

Education

Bachelor of Science, Physics | Minor, Mathematics ***Providence, RI***
Rhode Island College ***May, 2021***
Graduated Cum Laude | 3.538 GPA

Publications

Jayasekara, G., Antolini, C., Smith, M., Jacoby, D., Escolastico, J., Girard, N., Young, B.T., Hayes, D. (2021). Mechanisms of the Cu(I)-Catalyzed Intermolecular Photocycloaddition Reaction Revealed by Optical and X-ray Transient Absorption Spectroscopies. J. Am. Chem. Soc., 143 (46), 19356-19364 (2021). DOI: 10.1021/jacs.1c07282.

Escolastico, J., Girard, N., Antolini, C., Smith, M., Young, B., Hayes, D., (2021). Mössbauer Analysis of S- Doped Nickel Nitroprusside for Oxygen Evolution Reaction. Talk presented by B. Young at the American Physical Society March Meeting, March 15-19, 2021, Nashville, TN.
https://meetings.aps.org/Meeting/MAR21/Session/B61.2

Additional Qualifications

- Experienced MATLAB tool developer with a concentration in automation of analysis of large data sets
- Worked at Argonne National Laboratory during the summer of 2019 as part of the research assistantship at Rhode Island College
- Laser and radiological safety certified through the University of Rhode Island
- Forklift certified through Roger Williams Park Zoo
- Knowledgeable in laboratory safety and standard practices

Professional Associations

American Physical Society (APS) ***September, 2020 – Present***
Member of the American Physical Society

Open Researcher and Contributor ID (ORCID) ***September, 2020 – Present***
ID Number: 0000-0002-5124-5986
https://orcid.org/0000-0002-5124-5986

Departmental Action Leadership Institute (DALI) ***April, 2020 – October, 2022***
Rhode Island College
Defined and achieved goals aimed towards engaging processes to sustain improvements to the physics curriculum and developing program-leveled student learning assessment plans

Skills

- Experimental research in spectroscopic techniques
- Daily MATLAB user
- Dedicated analyst with practical mathematical knowledge
- Demonstrated success as a team member in professional research setting
- Proven leader
- Solution-oriented with strong critical-thinking abilities
- In-depth knowledge of laboratory safety and standard practices
- Attentive and organized
- Strong written and oral communicator