

Sean D. Lam

Colorado Springs, CO | s_lam2023@coloradocollege.edu | [LinkedIn](#) | [GitHub](#)

EDUCATION

Colorado College, Colorado Springs, CO

Expected Graduation: May 2027

Bachelor of Arts, Major(s): Physics (Comprehensive Emphasis) and Chemistry

Cumulative GPA: 3.88/4.00

Relevant Coursework: Physical Chemistry, Quantum & Statistical Mechanics, Electronics, Electromagnetic Theory

Future Coursework: Structures of Organic Molecules, Quantum Mechanics 2, Chemical Equilibrium and Kinetics

HONORS & GRANTS

Barry Goldwater Scholarship Nominee, Colorado College Goldwater Scholarship Committee (2025)

- Selected as one of four students to forward applications in the Goldwater Scholarship for the institution

Student & Faculty Research Grant for Physics, Colorado College Student Collaborative Research Program (2024)

- \$5400 grant to conduct intensive physics summer research with a Colorado College faculty member

Student Academic Research Grant, Colorado College (2024)

- \$500 research grant for participating in an NSF-funded course and presenting work to an introductory class

Conference Presentation Grant, Colorado College (2024)

- \$750 grant to offset costs and present research at the 245th Meeting of the American Astronomical Society

ACS Undergraduate Award in Physical Chemistry, American Chemical Society (2025)

- Recognized for excellence in physical chemistry based on research, coursework, and dedication to the field

Dean's List, Colorado College (2023-)

- Awarded for earning a 3.75 or above GPA in a given academic year

SCAC Academic Honor Roll, Southern Collegiate Athletic Conference (2023-)

- Awarded for maintaining a minimum average of 3.25 for the term as a regular member of a varsity athletic team

IBARMS Scholarship, Rocky Mountain Association of IB World Schools (2023-2024)

- \$1000 scholarship to an IB student who demonstrates academic excellence and IB Learner Profile qualities

RESEARCH EXPERIENCE

Northwestern University Department of Materials Science & Engineering, Evanston, IL

Sep 2024 – Present

MICRO Scholar (Sep 2024-) & NSF-REU MRSEC Fellow (Summer 2025)

Advisor: Dr. Roberto dos Reis

- Developing **QuScope**, a hybrid quantum-classical software library for microscopy, EELS, and XRD analysis, integrating QML models, QFT-based segmentation, and variational quantum denoising pipelines
- Designing and implementing novel quantum-enhanced preprocessing algorithms for EELS, including Quantum Richardson-Lucy Deconvolution (QRLD) and a Quantum Kramers-Kronig Transform (QKKT)
- Implementing quantum feature extractors and spatial mapping tools for analyzing bonding, hybridization, magnetic interactions, and quantum coherence in nanoscale materials
- Creating a patch-based quantum image denoising framework using Grover search, entropy/confidence maps, and adaptive classical filtering, improving SNR and edge preservation in noisy microscopy datasets

Colorado College Department of Physics, Colorado Springs, CO

Feb 2024 – Jan 2025

Research Assistant & Pathways to SCoRe Fellow, Advisor: Dr. Dhanesh Krishnarao

- Led the development of **pyonized**, an Astropy-affiliated Python package for modeling ionized gas in 4D, which implements algorithms to simulate emission line intensities and accounts for extinction correction
- Independently reviewed astrophysics literature and self-taught Python, Ubuntu, Anaconda, and Jupyter Notebook to develop foundational coding skills
- Leveraged libraries like Astropy, Matplotlib, Numpy, and SciPy for data simulation and analysis, providing insights into the structure and dynamics of ionized gas beyond the resolution of WHAM and LVM surveys

Student Researcher, Advisor: Dr. Adam D. Light

- Investigated the potential of plasma treatment to prevent corrosion in metal surfaces, as part of an NSF-funded research course
- Learned multiple skills to conduct experiments independently, ranging from operating a high-voltage plasma jet to creating a controlled chemical rusting solution to simulate environmental conditions
- Utilized X-Ray Fluorescence (XRF) Spectroscopy and data analysis to assess physicochemical changes and evaluate the effectiveness of plasma treatment in inhibiting corrosion

OTHER PROFESSIONAL EXPERIENCE

Colorado College Quantitative Reasoning Center, Colorado Springs, CO

Feb 2025 – Present

QRC Tutor

- Tutor students through learning assistant sessions and drop-in hours in chemistry, mathematics, and physics courses
- Classes Supported: Physics I-II, Modern Physics, Electronics, Lagrangian Mechanics, Electromagnetic Theory, Chemistry I-II, Physical Chemistry I-III, Calculus I-III, Linear Algebra, Vector Analysis

Colorado College Physics Department, Colorado Springs, CO

Sep 2024 – Present

Physics Student Grader

- Collaborate with professor to efficiently grade about 10-15 problem sets throughout the block in introductory classes, and provide detailed and clear feedback to help students understand and resolve any errors
- Classes Supported: Physics for the Life Sciences 1 & 2, Physics for the Physical Sciences 1 & 2, Modern Physics

Colorado College Athletics Department, Colorado Springs, CO

Sep 2023 – Present

Athletic Marketing Assistant

- Assist with the preparation, promotion, staffing, and execution of athletics events for the college's 17 NCAA sports
- Occasional videography and social media content creation for the Colorado College Athletics social media page

PRESENTATIONS

Lam, S. D., Krishnarao, D., [pyonized: Modeling Ionized Gas in Four Dimensions](#), AAS 245, National Harbor, MD, (January, 2025)

Lam, S. D., Krishnarao, D., [pyonized: Python Package for Modeling Ionized Gas](#), SCoRe and Internship Symposium, Colorado College, (February, 2025)

Lam, S. D., dos Reis, R., Developing Quantum Machine Learning Techniques to Enhance Microscopy Data Analysis, MICRO Summit 2025, Northwestern University, (April, 2025)

***Lam, S. D., dos Reis, R., QuScope: Quantum Algorithms for Microscopy, SCoRe and Internship Symposium, Colorado College, (September, 2025)

***Upcoming Presentation(s)

LEADERSHIP & SERVICE

Colorado College Chapter of the Society of Physics Students, Colorado Springs, CO

Feb 2025 – Present

Interim Officer, Feb 2025 - April 2025

President, April 2025 - Present

- Leading the Society of Physics Students (SPS) Chapter, designing and leading monthly meetings and activities, and overseeing the mentorship program
- Spearheaded the transition of Physics Phriends into an official SPS Chapter during *Interim Officer* role, drafting and revising the chapter constitution to establish a strong governance framework
- Managed the leadership election and transition process as an *Interim Officer* to ensure an efficient handover to future officers for the 2025-26 academic year.

Colorado College Morgan's Message, Colorado Springs, CO

Aug 2023 – Present

Member & Peer Mentor

- Engage in mental-health topics with other student-athletes and the entire Colorado College student body
- Provide members and the greater athletic community with resources, ways to navigate college athletics, and strategies to help teammates

Colorado College Men's Track & Field, Colorado Springs, CO

Aug 2023 – Present

Student-Athlete

- Travel, practice, and compete with the Men's NCAA D3 Varsity Track & Field team at Colorado College
- Engage in 25+ hours a week of practice, meets, workouts, and travel
- Contribute to team-led service trips and events around Colorado Springs

SKILLS

Technical: Python, QiSkit, HPC, ML/QML, LaTeX, Mathematica, HTML/CSS/JS, LTSpice, Minitab, ImageJ

Laboratory: IR/NMR/Mass Spectroscopy, Circuit Design and Analysis, Calorimetry, Plasma Jet Operation, Optics

Languages: English (Native), Vietnamese (Native), Spanish (Limited)