

Summary: I am a PhD student in Applied Mathematics at the University of California, Santa Cruz. My research interests are in fluid dynamics and computational physics, specifically high order finite volume methods for systems of hyperbolic conservation laws such as the Euler equations and ideal MHD equations. My teaching interests are centered around improving student engagement and sense of belonging through active learning and transparent course design. I am also very passionate about improving the access to and the quality of college level math and science curriculum for students from diverse backgrounds.

Education

B.S. in Mathematics, University of California, Santa Cruz June 2021

- Minor in Physics
- Member of the NCAA Cross Country and Track teams.

PhD Student, University of California, Santa Cruz September 2021 - Present

- I am working on a new method that leverages a Gaussian process to enforce the divergence free condition in ideal magnetohydrodynamics simulations.
- I am also part of a team using the [FLASH code](#) to model damage caused to fourth generation storage ring collimator materials by high energy electron beams.
- Advisor: Professor Dongwook Lee.

Teaching

Graduate Student Instructor, University of California, Santa Cruz Fall quarter 2024

- Instructor of record for *AM 129: Foundations of Scientific Computing*.
- Responsible for adapting and updating existing course materials, holding 3.25 hours of class each week, holding 6 hours of office hours each week, and overseeing one teaching assistant.

Graduate Pedagogy Fellow, UCSC Teaching and Learning Center January 2024 - December 2024

- Participated in weekly seminars centered around equity minded teaching, and TA support techniques.
- Currently collaborating with the current AM GPF and the AM teaching faculty to re-design and resurrect the introduction to teaching course, AM 200, for the Fall 2025 incoming class of graduate students.

Equitable Course Design for GSIs, UCSC Teaching and Learning Center Spring quarter 2024

- Participating in GRAD 215: Equitable Course Design for GSIs.
- This is a course designed to help current and emerging graduate student instructors (GSIs) to apply research-based frameworks for developing college-level courses that center significant student learning, antiracism, accessibility, and equitable outcomes.

Teaching Assistant, University of California, Santa Cruz 4 Quarters | Fall 2021 - Fall 2023

- Courses Supported:
 - *AM 30: Multivariate Calculus for Engineers* (two quarters) | Responsible for giving feedback on weekly homework assignments and writing solution guides. Held 6 hours of office hours and discussion sections each week.
 - *AM 11B: Mathematical Methods for Economists II* | Helped grade both midterm exams and the final. Held 5 hours of discussion sections and office hours each week.
 - *AM 129: Foundations of Scientific Computing* | Graded and provided feedback on the homework assignments and the final project. Held 4 hours of office hours each week in order to help the students understand concepts from the assignments.

Preparing for Inclusive Teaching Fall 2023, UCSC Teaching and Learning Center 22 September 2023

- Participated in one-day workshop.

Math and Physics Tutor, UCSC Learning Support Services 2019 - 2021

- Conducted 3 weekly small group tutoring sessions focused on engagement of students.
- Prepared weekly planning sheets with detailed activities.

- Courses supported: Waves and Optics, Real Analysis, Abstract Algebra, Linear Algebra, Vector Calculus, and Discrete Mathematics.

Program Mentor, UCSC Learning Support Services2019

- Trained and mentored other tutors with a focus on active learning techniques.
- Conducted quarterly evaluations of fellow tutors. Provided feedback on ways to improve student engagement and retention.

Research

Graduate Student Intern, Los Alamos National Laboratory (LANL) Summer 2022

- Ran 1D inertial confinement fusion (ICF) simulations on HPC machines using a Lagrangian hydrodynamics code with the goal of modeling a high yield ICF shot.
- Produced useful data for code to code verification with other codes capable of ICF simulations.

Summer Intern, [Los Alamos National Laboratory X Computational Physics Division](#) Summer 2021

- Implemented the Rutherford scattering model in a large, C++, Monte Carlo charged particle transport (CPT) code library.
- Performed code to code verification using two other CPT codes at the laboratory.

Undergraduate Researcher, [Polymath Research Experience for Undergraduates](#) Summer 2020

- Developed a visualization tool for representing convex geometries using circles in the plane.
- Contributor on a [paper](#) with cohort of 12 students and our mentor Professor Kira Adaricheva.

Skills

Programming: Matlab, Python, Fortran, Git, Bash.

HPC: Experienced in using supercomputers to run code in parallel, particularly large hydrocodes.

L^AT_EX: Proficient in mathematical and scientific document typesetting.

Honors

Male Scholar Athlete of the Year, [Coast-To-Coast Athletic Conference](#) 2022 - 2023

Highest Honors in Major of B.S. in Mathematics, University of California, Santa Cruz June 2021