

Samuel McLaren

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Motivated mathematical modeler with foci in numerical PDEs, nonlinear optics, computational physics, and semiconductor quantum theory. Capable of working independently and within a team. Friendly and personable professional willing to take on any challenge and expand into new areas.

Education

University of Arizona, Tucson, AZ
PhD in Applied Mathematics minoring in Optics August 2021
Master of Science in Applied Mathematics June 2019
GPA: 3.78

Western New England University, Springfield, MA
Bachelor of Science in Mechanical Engineering May 2016
Bachelor of Science in Applied Mathematics
GPA: 3.91

Relevant Work

University of Arizona, Tucson, AZ

NDSEG Fellow Graduate Researcher August 2017-Present

- Developed electromagnetic and quantum mechanics coupled model of a laser cavity.
- Extended and documented hybrid OpenMP/MPI parallelized C++ codebase to model novel experiment driven optical cavities and physical effects.
- Published multiple first author peer-review articles.
- Presented at SPIE Photonics West 2020, 2021 to approximately 30 people.
- Presented regular reports to diverse theoretical and experimental audience of up to twenty people.

Graduate Teaching Assistant September 2016-May 2017

- Taught four sections of College Algebra.
- Wrote and delivered lectures.
- Designed and graded homework assignments.
- Proctored exams and managed attendance and grade books.

Western New England University, Springfield, MA

Mathematical Origami Research Assistant January 2014-May 2016

- Researched mathematical origami and combinatorial geometry.
- Contributed to international workshop.
- Presented results at national MAA MathFest conference to 50 people.

Peer Tutor December 2012-May 2016

- Led students in understanding undergraduate mathematics and engineering coursework

Lab Assistant December 2012-December 2013

- Guided students to understand and complete lab assignments in multiple engineering laboratory courses
- Maintained proper lab safety and equipment usage.

FloDesign Sonics, Wilbraham, MA

Research Intern September 2013-September 2014

- Designed and tested components to improve an acoustophoretic system
- Developed, tested and implemented novel dual-flow filtration setup
- Presented weekly reports to company of twenty people

Software Skills

C, C++, MATLAB, OpenMP, MPI, SolidWorks, COMSOL, LabVIEW, SQL, LaTeX, Visual Basic Studio, Visual Basic for Applications, Nastram NX, Mathematica, and MS Office.

Academic Projects

Dynamic Coupling of Full-Field and Envelope Pulse Propagators **August 2016-May 2017**

- Analyzed the nonlinear Schrödinger equation and the unidirectional pulse propagation equation to couple pulse propagators for scattering conditions.
- Collaborated weekly with advisor.

Data Acquisition System for Turbo-Jet-Engine Lab Module **September 2015-May 2016**

- Designed and coded a data acquisition system for a team created jet-engine lab module.
- Determined and characterized digital sensors.

Numerical Analysis of Cubic Non-linear Schrödinger Equation **January 2015-May 2016**

- Analyzed self-trapping of numerical solutions to the cubic non-linear Schrödinger equation with a time dependent nonlinearity coefficient.
- Presented results to university mathematics department audience of 30 people.

Multi-Rotor Aerial Vehicle Design Competition Team Leader **September 2013-April 2014**

- Organized design efforts towards a quad-rotor aerial vehicle for competing in the 2014 American Society of Mechanical Engineers Student Design Competition.

Solar Decathlon Project Support Leader **January 2013-December 2014**

- Led multiple team efforts for entrance into Department of Energy Competition to build an innovative sustainable house.
- Wrote large portions of the successful grant proposal.
- Coordinated various team efforts.

Volunteer Experience

Mentor for Undergraduate Mathematical Modeling Course **January 2020-Present**

- Mentored undergraduate students in developing mathematical models on multiple topics
- Coordinated with university faculty and BioSphere 2 personnel
- Researched Gateway Lunar Orbit mission alongside team to support them
- Delegated tasks at weekly meetings to ensure fair contributions

Graduate Student Mentoring Program Coordinator **August 2019-Present**

- Recruited student mentors for incoming doctoral students.
- Organized panel discussions regarding various aspects of graduate student life.
- Mentored multiple students each semester through regular meetings and communication.
- Communicated with department faculty to financial support for participants

Additional Activities

Graduate Student Representative, Student Grant Proposal Reviewer, SIAM Student chapter President, Alternative Spring Break Team Leader, Campus Activities Board Films Committee Chair, Ultimate Frisbee Club President, Math Club President, and avid rock climber.