

THOMAS HOGANCAMP

Monterey, California

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EDUCATION

University of Missouri-Columbia

PhD, Mathematics, GPA 3.950

May 2023

Columbia, Missouri

University of Missouri-St. Louis

BS Mathematics, GPA 3.983

May 2017

St. Louis, Missouri

Pierre Laclède Honors Certificate

EXPERIENCE

Naval Research Laboratory, Monterey | ASEE Postdoctoral Research Fellow

June 2024 – Present

- Full time employment, 40 hours per week
- Designed and analyzed **novel quantum algorithms** for efficiently solving classes of linear and nonlinear **partial differential equations**, with applications in **physics** and **fluid dynamics**
- Experience with circuit development for both **NISQ** and **fault tolerant** frameworks
- Collaborated with interdisciplinary teams including meteorologists, applied mathematicians, and physicists to align quantum algorithm development with real-world modeling challenges

AI Mathematics Specialist | Contractor through Outlier AI

January 2024 – June 2024

- Part time, 20 hours per week
- Created original math problems to challenge various models' capacity for multi-step reasoning and abstract problem-solving
- Graded model responses for correctness, rigor, and clarity. Guided stumped models to correct solutions
- Reviewed problem sets, solutions, and model guidance of other math specialists to ensure consistency, alignment with internal standards, and accuracy

St. Louis Community College | Instructor

September 2022 – December 2022

- Full time, 50 hours per week
- Taught 18 credit hours in a fully hybrid format
- Designed and maintained course webpage on MyOpenMath

University of Missouri-Columbia | Instructor and TA

August 2017 – August 2022

- Part time, average of 20 hours per week
- Primary Instructor for 41 credit hours, and served as a TA for 50 credit hours
- Delivered lectures in person, in a hybrid format, and fully online
- Designed and maintained course webpage on Canvas

University of Missouri-Columbia | Dissertation Research

August 2019 – May 2023

- Research emphasis in **bifurcation theory** and **nonlinear partial differential equations**
- Developed new theoretical tools for quasilinear degenerate-elliptic PDEs that have applications in **nonlinear elasticity** and **gas dynamics**
- Supported in part by the NSF through DMS-1812436

SKILLS

- **Mathematics:** Ordinary and Partial Differential Equations, Quantum Computing, Linear Algebra, Variational Methods, Harmonic Analysis, Finite Difference/Element Methods
- **Programming:** Intermediate Python including Qiskit. Experience with C++, Julia, and MATLAB
- **Organizational:** Routinely taught classes with 60+ students per semester. Designed syllabi and class calendars, created assignments, and built course webpages in Canvas and MyOpenMath

PUBLICATIONS

- Reuben Demirdjian, Thomas Hogancamp, Abeynaya Gnanasekaran, Amit Surana, and Daniel Gunlycke. *Quantum Data Loading for Carleman Linearized Systems: Application to the Lattice-Boltzmann Equation*, arXiv preprint arXiv:2605.00302v1, 2026
- Thomas Hogancamp, Reuben Demirdjian, and Daniel Gunlycke. *A Linear Combination of Unitaries Decomposition for the Laplace Operator*, submitted, arXiv preprint arXiv:2601.06370, 2026
- Reuben Demirdjian, Thomas Hogancamp, and Daniel Gunlycke. *Efficient decomposition of the carleman linearized burgers' equation*. *Physical Review A*, 113(3):032408, 2026
- Thomas Hogancamp, *Broadening global families of anti-plane shear equilibria*, SIAM Journal on Mathematical Analysis, 53 (2021), pp. 5853–5879

Talks and Presentations

- *Linear Combination of Non-Unitaries: Theory, Computation and Applications*, Tutorial Session, *IEEE Quantum Week 2026*, Toronto, Canada, September 2026. Co-organizer and Presenter; forthcoming.
- *A Linear Combination of Unitaries Decomposition for the Laplace Operator*, US CLIVAR, *Quantum Computing and Sensing for Weather and Climate Applications Workshop*, Boulder, Colorado, August 2026. Poster Presentation; forthcoming.
- *Anti-Plane Shear Equilibria in the Large*, MU Differential Equations Seminar, University of Missouri-Columbia, April 2023, Invited Talk
- *Twelfth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, April 2022, Talk
- *Broadening global families of anti-plane shear equilibria*, MU Differential Equations Seminar, University of Missouri-Columbia, February 2021, Invited Talk
- *KUMUNU-ISU Conference on PDE, Dynamical Systems, and Applications 2021*, presentation