Thomas Hogancamp

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EDUCATION

University of Missouri-Columbia **May 2023**
PhD, Mathematics, GPA 3.950 *Columbia, Missouri*

University of Missouri-St. Louis **May 2017**
BS Mathematics, GPA 3.983 *St. Louis, Missouri*
Pierre Laclede Honors Certificate

EXPERIENCE

Naval Research Laboratory, Monterey | ASEE Postdoctoral Research Fellow **June 2024 – Present**

- Designed and analyzed **novel quantum algorithms** for efficiently solving classes of linear and nonlinear **partial differential equations**, with applications in **physics** and **fluid dynamics**
- Developed efficient **quantum circuits** that leverage **variational techniques** and **hybrid methods**
- 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**

- 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

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/partial differential equations, linear algebra, variational methods, harmonic analysis, Finite Difference/Element Methods
- **Programming**: Intermediate Python including Qiskit. Experience with C++, Julia , and MATLAB
- **Machine Learning**: Experience with Tensorflow. Have designed a Physics Informed Neural Network for PDE applications.
- **Organizational**: Routinely taught classes with 60+ students per semester. Designed syllabi and class calendar, created assignments, and built course webpages in Canvas and MyOpenMath

SERVICE

Grade A Plus Academic Support and Enrichment **August 2018 – August 2022**
Volunteer Tutor *Columbia, MO*

- Provided weekly mathematics support for at-risk middle/high school students

CASE Tutoring **Spring 2019**
Volunteer Tutor *Columbia, MO*

- Provided weekly mathematics tutoring services for MU Calculus Students

MU AMS Graduate Student Chapter **Spring 2019 – Spring 2021**
Treasurer *Columbia, MO*

- Completed annual financial reports and maintained budget

TEACHING

St. Louis Community College **September 2022 – December 2022**
Instructor *St. Louis, MO*

- Taught 18 credit hours in a fully hybrid format. Full time.

University of Missouri-Columbia **August 2017 – August 2022**
Instructor and TA *Columbia, MO*

- Primary Instructor for 41 credit hours, and served as a TA for 50 credit hours. Part time
- Delivered lectures in person, in a hybrid format, and fully online

PUBLICATIONS

- Reuben Demirdjian, Thomas Hogancamp, and Daniel Gunlycke. *An Efficient Decomposition of the Carleman Linearized Burgers' Equation*, arXiv preprint arXiv:2505.00285 (2025).
- Thomas Hogancamp, *Broadening global families of anti-plane shear equilibria*, SIAM Journal on Mathematical Analysis, 53 (2021), pp. 5853–5879

Talks and Presentations

- *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