

Mason Haberle

Curriculum Vitae

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Education

- 2021 – 2026 **New York University, Courant Institute**, *PhD in Mathematics Candidate*.
Advisor: Alan Kaptanoglu
Expected Graduation: May 2026
- 2017 – 2020 **The University of California, Berkeley**, *Bachelor of Arts, Mathematics with Honors*,
GPA – 4.00.
Graduated December 2020

Research Papers

- Chowdhary, A., Haberle, M., Ofori-Atta, W., Wu, Q. (2023). *Weak Diffusive Stability of Roll Solutions at the Zigzag Boundary*. Submitted, [arXiv:2310.12365](https://arxiv.org/abs/2310.12365) [nlin.PS]
- Chen, A., Demmel, J., Dinh, G., Haberle, M., Holtz, O., (2021). *Communication Bounds for Convolutional Neural Networks*. PASC '22, [arXiv:2204.08279](https://arxiv.org/abs/2204.08279) [cs.DC]
- Haberle, M., Wang, J. (2020). *A Full Study of the Dynamics on Dilation Tori*. Submitted, [arXiv:2012.04159](https://arxiv.org/abs/2012.04159) [math.DS]

Research Presentations

Posters

- Oct 2024 **Global Stage-1 Optimization for Stellarator Design**, APS Division of Plasma Physics 2024 Annual Meeting.

Talks

- Oct 2024 **Stochastic Ideas in Stellarator Optimization**, NYU Student Probability Seminar, NYU Undergraduate Math Society Seminar.
- Jan 2024 **Crash Course in Free Probability**, NYU Student Probability Seminar.
- Jul 2023 **Convex Integration and Onsager's Conjecture**, MFD Advanced Summer School, IESC.
- Jun 2022 **Communication Bounds for Convolutional Neural Networks**, PASC22.
- Aug 2020 **Dynamics on Dilation Tori**, 2020 Indiana REU Conference.

Conferences/Workshops

- 2024 **APS Division of Plasma Physics Annual Meeting**, APS DPP, Atlanta, Georgia.
- 2024 **Princeton Plasma Physics Laboratory Graduate Summer School**, PPPL/Simons Foundation.

- 2021, 2023 **Mathematical Fluid Dynamics Advanced Summer School**, Institut d'Etudes Scientifiques de Carg  se.
- 2022 **Platform for Advanced Scientific Computing (PASC) 2022**, Congress Center Basel.
- 2022 **MSRI-NCTS Joint Summer School: Recent Topics in Well Posedness**, University of Hawaii at Hilo.
- 2022 **Seminar in Stochastic Processes 2022**, Lehigh University.
- 2022 **Flexibility and Rigidity in Dynamical Systems 2022**, Simons Center at Stony Brook.
- 2021 **Mathematical Problems in Fluid Dynamics**, MSRI.

Selected Coursework

- Spring 2024 **Magnetohydrodynamics**, Alan Kaptanoglu.
- Fall 2023 **Fluid Dynamics**, Esteban Tabak.
- Spring 2023 **Numerical Methods for ODEs and PDEs**, Aleks Donev.
- Fall 2022 **Numerical Linear Algebra**, Benjamin Peherstorfer.
- Fall 2019 **Computer Architecture and Parallelism**, Dan Garcia, Michael Lustig.

Awards and Scholarships

- 2022 NSF Graduate Research Fellowship
- 2021 NYU GSAS MacCracken Fellowship
- 2021 Dorothea Klumpke Roberts Prize for Academic Achievement in the UC Berkeley Dept of Mathematics

Research Skills

- Proficient in Python, Java, C, and Matlab.
- Experienced with stellarator optimization libraries SimsOpt, VMEC, and DESC.
- Experienced with a number of optimization tools such as the scipy optimization toolkit, PDFO, and TuRBO.
- Strong interest in many fields of analysis: Stochastic Analysis, Partial Differential Equations, Numerical Optimization, Dynamical Systems, Harmonic/Functional Analysis.