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 [nlin.PS]

Chen, A., Demmel, J., Dinh, G., Haberle, M., Holtz, O., (2021). *Communication Bounds for Convolutional Neural Networks*. PASC '22, arXiv:2204.08279 [cs.DC]

Haberle, M., Wang, J. (2020). *A Full Study of the Dynamics on Dilation Tori*. Submitted, arXiv: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 Cargése.

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.