

Hezekiah Grayer II

Department of Mathematics
Stanford University

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RESEARCH AREAS

Partial differential equations, nonlinear dynamics, fluid mechanics, plasma physics

EDUCATION

Princeton University

Ph.D. Applied and Computational Mathematics 2026
Advisor : Peter Constantin

M.A. Applied and Computational Mathematics 2022

Arizona State University

B.S. Mathematics *summa cum laude* 2020
Advisor : Juan M. Lopez

B.S.E. Aerospace Engineering *summa cum laude* 2020

APPOINTMENTS

2026 – Present **Stanford University** California
Szegő Assistant Professor

2024 – 2026 **BEAM** New York
Junior Faculty

AWARDS

2026 AMS–Simons Travel Grant, *Simons Foundation*

2021 NASEM–Ford Fellowship, *Ford Foundation*

2021 Graduate Research Fellowship, *National Science Foundation*

2020 Presidential Fellowship, *Princeton University*

2019 Benjamin A. Gilman Scholarship, *U.S. Department of State*

2018 RISE Scholarship, *Deutscher Akademischer Austauschdienst*

2016 President Barack Obama Scholarship, *Arizona State University*

PUBLICATIONS

2026	Ali Arslan and <i>H. Grayer II</i> « Bounds for inertialess dynamo » arXiv e-print	arXiv
2026	<i>H. Grayer II</i> « Analysis of fluids, fusion and space plasma » Princeton University Doctoral Dissertation	ProQuest
2026	Peter Constantin and <i>H. Grayer II</i> « Radiative Vlasov–Maxwell Equations » Communications in Mathematical Physics	arXiv DOI
2024	Theodore D. Drivas, Daniel Ginsberg and <i>H. Grayer II</i> « On the distribution of heat in fibered magnetic fields » Communications in Mathematical Physics	arXiv DOI
2023	<i>H. Grayer II</i> « Dynamics of density patches in infinite Prandtl number convection » Archive for Rational Mechanics and Analysis	arXiv DOI
2021	<i>H. Grayer II</i> , Jason Yalim, Bruno D. Welfert and Juan M. Lopez « Stably-stratified square cavity subjected to horizontal oscillations: responses to small amplitude forcing » Journal of Fluid Mechanics	DOI
2020	<i>H. Grayer II</i> , Jason Yalim, Bruno D. Welfert and Juan M. Lopez « Dynamics in a stably stratified tilted square cavity » Journal of Fluid Mechanics	DOI
2019	<i>H. Grayer II</i> « Dynamics of tilted stably stratified square cavities » Barrett Honors College Thesis	ProQuest

INVITED TALKS

2026	Sep 29	Analysis and PDE Seminar <i>Stanford University</i>
	Apr 21	PDE/Analysis Seminar <i>Massachusetts Institute of Technology</i>
	Jan 29	PDE and Applied Math Seminar <i>University of California, Davis</i>
	Jan 28	Applied Math Seminar <i>Stanford University</i>
2025	Nov 4	Institute for Fusion Studies Seminar <i>University of Texas at Austin</i>
	Oct 21	Applied Math and Analysis Seminar <i>Duke University</i>
	Sep 25	Seminar in PDE and Mathematical Physics <i>ETH Zürich</i>

	Apr 10	Analysis Seminar <i>University of Pennsylvania</i>
	Mar 4	Heliophysics Seminar <i>Princeton Plasma Physics Laboratory</i>
	Feb 17	PACM Colloquium <i>Princeton University</i>
2024	Apr 7	AMS Special Session : Stochastic Methods in Fluid Mechanics <i>Howard University</i>
	Mar 11	Analysis and PDE Seminar <i>University of California, Berkeley</i>
	Feb 19	PACM Colloquium <i>Princeton University</i>
2023	Mar 18	AMS Special Session : Dynamics of PDE <i>Georgia Institute of Technology</i>
	Feb 10	Seminar in Plasma Physics <i>Princeton Plasma Physics Laboratory</i>

TEACHING

Stanford University

Szegő Assistant Professor

Winter 2027	MATH 256A : Partial Differential Equations
Autumn 2026	MATH 19 : Calculus

Bridge to Enter Advanced Mathematics

Junior Faculty

Summer 2026	Discovery Program <i>a.m.</i> Experimental Geometry <i>p.m.</i> Primes and Programming
Summer 2024	Discovery Program <i>a.m.</i> Experimental Geometry <i>p.m.</i> Aviation

Princeton University

Assistant in Instruction

Spring 2024	MAT 322 : Introduction to Differential Equations
Spring 2022	APC 523 : Numerical Algorithms for Scientific Computing

Arizona State University

Teaching Aide

Spring 2019	MAE 384 : Advanced Mathematical Methods for Engineers
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SMALL GRANTS

2025	ICM Outreach Grant, <i>Simons Foundation</i>
2024	Siemens Grant, <i>Mathematisches Forschungsinstitut Oberwolfach</i>
2023	Student Travel Grant, <i>American Mathematical Society</i>
2022	Graduate Scholars Travel Fund, <i>Princeton University</i>
2019	FURI Grant, <i>Arizona State University</i>

SERVICE

International Mathematical Union

Summer 2026	<i>Exhibitor</i> , Math Festival International Congress of Mathematicians
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City University of New York

Summer 2026	<i>Mentor and Organizer</i> PolyMath Jr. Program
2026	Best Graduate Student Mentor Award

Princeton University

2021 – 2024	<i>PACM Representative</i> , Fine Hall Climate Committee <i>Mentor</i> , Directed Reading Program
2021 – 2022	<i>PACM Representative</i> , Graduate Student Government <i>Mentor</i> , Graduate Scholars Peer Mentor Program
2020 – 2021	<i>Organizer</i> , PACM Graduate Student Seminar <i>Mentor</i> , Mentoring Möbius Program

National Academies of Sciences, Engineering, and Medicine

Summer 2022	<i>Organizer</i> , Session in Mathematics and Physics Conference of Ford Fellows
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Arizona State University

2019 – 2020	<i>Secretary</i> , AMS Graduate Student Chapter <i>Mentor</i> , School of Mathematical and Statistical Sciences
2019	“The College” Student Leader Award

Referee Activity

Kinetic and Related Models, Annals of PDE

Updated September 2026