

Hezekiah Grayer II

Program in Applied and Computational Mathematics
Princeton University

hgrayer@math.princeton.edu
math.princeton.edu/~hgrayer

RESEARCH AREAS

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

EDUCATION

Princeton University

PhD	Applied and Computational Mathematics <i>Advisor</i> : Peter Constantin	2020 – Present
MA	Applied and Computational Mathematics	2022

Arizona State University

BS	Mathematics <i>summa cum laude</i> <i>Advisor</i> : Juan M Lopez	2020
BSE	Aerospace Engineering <i>summa cum laude</i>	2020

APPOINTMENTS

Summer 2024	BEAM Junior Faculty	New York
2022 – 2024	Princeton University Assistant in Instruction	New Jersey
Spring 2019	Arizona State University Teaching Aide	Arizona
Summer 2018	Technische Universität Dresden DAAD–RISE Intern	Germany

AWARDS

2021	Ford Foundation Predoctoral Fellowship
2021	NSF Graduate Research Fellowship
2020	Princeton President’s Fellowship
2019	Benjamin A Gilman Scholarship
2016	President Barack Obama Scholarship

PUBLICATIONS

- 2024 “On the distribution of heat in fibered magnetic fields” & TD Drivas, D Ginsberg
Communications in Mathematical Physics. doi:10.1007/s00220-023-04886-4
(arXiv:2210.09968)
- 2023 “Dynamics of density patches in infinite Prandtl number convection”
Archive for Rational Mechanics and Analysis. doi:10.1007/s00205-023-01898-1
(arXiv:2207.09738)
- 2021 “Stably-stratified square cavity subjected to horizontal oscillations: responses to small amplitude forcing” & J Yalim, BD Welfert, JM Lopez
Journal of Fluid Mechanics. doi:10.1017/jfm.2021.73
- 2020 “Dynamics in a stably stratified tilted square cavity” & J Yalim, BD Welfert, JM Lopez
Journal of Fluid Mechanics. doi:10.1017/jfm.2019.913

INVITED TALKS

- 2024 AMS Special Session : Stochastic Methods in Fluid Mechanics
Howard University. Apr 7
- Analysis and PDE Seminar
University of California, Berkeley. Mar 11
- PACM Graduate Student Seminar
Princeton University. Feb 27
- PACM Colloquium
Princeton University. Feb 19
- 2023 Spectra LGBTQ+ Mathematics Conference
Princeton University. Sep 22
- AMS Special Session : Dynamics of PDE
Georgia Institute of Technology. Mar 18
- Seminar in Plasma Physics
Princeton Plasma Physics Laboratory. Feb 10
- 2022 14th European Fluid Mechanics Conference
Athens, Greece. Sep 15
- 2021 PACM Graduate Student Seminar
Princeton University. Nov 2

SMALL GRANTS

- 2023 Student Travel Grant (\$250), *American Mathematical Society*
- 2022 Graduate Scholars Travel Fund (\$700), *Princeton University*
- 2019 FURI Grant (\$3000), *Arizona State University*

TEACHING

Bridge to Enter Advanced Mathematics (BEAM)

Summer 2024 Discovery Program for 6th Graders
Morning Course : Experimental Geometry
Afternoon Course : Aviation, “The Story of Flight”

Princeton University

Spring 2024 MAT 322: Introduction to Differential Equations
Principal Instructor : Oscar Mickelin
Spring 2022 APC 523: Numerical Algorithms for Scientific Computing
Principal Instructor : Romain Teysier

Arizona State University

Spring 2019 MAE 384: Advanced Mathematical Methods for Engineers
Principal Instructor : Yulia Peet

SERVICE

Princeton University

2021 – Present *Climate & Inclusion Committee*, Fine Hall
Mentor, Directed Reading Program
2021 – 2022 *Assemblyman*, Graduate Student Government
Mentor, Graduate Scholars Peer Mentor Program
2020 – 2021 *Organizer*, PACM Graduate Student Seminar
Mentor, Mentoring Möbius Program

National Academies of Sciences, Engineering, and Medicine

2022 *Organizer of Session in Mathematics & Physics*,
Conference of Ford Fellows

Arizona State University

2019 – 2020 *Secretary*, AMS Graduate Student Chapter
Mentor, School of Mathematical and Statistical Sciences

Referee Activity

Kinetic and Related Models

Updated September 2024