

Daniel Ginsberg

CONTACT

INFORMATION

Department of Mathematics
Princeton University

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APPOINTMENTS

Sept 2021-: Postdoctoral research associate, Department of Mathematics, Princeton University.

Sept 2019-Sept 2021: Postdoctoral research associate, PACM, Princeton University.
Mentor: Peter Constantin.

EDUCATION

Johns Hopkins University Baltimore, Maryland
PhD. , Mathematics (May 2019)

- Research Topic: The free boundary problem for Euler's equations with vorticity
- Advisor: Dr. Hans Lindblad

University of Toronto, Toronto, Ontario

- MSc., Mathematics, May 2013
Research Topic: Stability of the Abrikosov Lattice Solutions to the Ginzburg-Landau equations
Advisor: Dr. I.M. Sigal
- H. B. Sc. Specialist, Mathematics; Major, Physics, 2007-2012

RESEARCH INTERESTS

Partial differential equations, Water waves, General relativity, Magnetohydrodynamics

PUBLICATIONS

- T. D. Drivas, D. Ginsberg, *Islands in stable fluid equilibria*, Preprint [arxiv.org/2305.11150](https://arxiv.org/abs/2305.11150) (2023)
- T. D. Drivas, D. Ginsberg, H. Grayer II, *On the distribution of heat in fibered magnetic fields*, Preprint [arxiv.org:2210.09968](https://arxiv.org/abs/2210.09968) (2022). To appear, Communications in Mathematical Physics.
- D. Ginsberg, I. Rodnianski, *On the Landau law of decay of 3D shocks*, in preparation.
- D. Ginsberg, H. Lindblad, *Local well-posedness for the relativistic Euler equations for a liquid body*, Preprint [arxiv.org:2109.01899](https://arxiv.org/abs/2109.01899) (2021). To appear, Annals of PDE.
- P. Constantin, T. Drivas, and D. Ginsberg, *Flexibility and rigidity of free boundary MHD equilibria*, Nonlinearity (2022), 35.5: 2363.
- P. Constantin, T. Drivas, and D. Ginsberg, *On quasisymmetric plasma equilibria sustained by small force*, Journal of Plasma Physics 87.1 (2021).
- P. Constantin, T. Drivas, and D. Ginsberg, *Flexibility and rigidity in steady fluid motion*, Communications in Mathematical Physics (2021): 1-43

- D. Ginsberg, H. Lindblad, and C. Luo, *Local well-posedness for the motion of a compressible, self-gravitating liquid with free surface boundary*, Archive for Rational Mechanics and Analysis (2019): 1-131.
- D. Ginsberg, *On the breakdown of solutions to the incompressible Euler equations with free surface boundary*, SIAM Journal on Mathematical Analysis (2021) 53 (3), 3366-3384
- D. Ginsberg, *A priori estimates for the relativistic Euler equations with free surface boundary*, Journal of Hyperbolic Differential Equations 16.03 (2019): 401-442.
- D. Ginsberg, *On the lifespan of three-dimensional gravity water waves with vorticity*, Preprint [arxiv.org:1812.01583](https://arxiv.org/abs/1812.01583)
- D. Ginsberg and G. Simpson, *Analytical and Numerical Results on the Positivity of Steady State Solutions of a Thin Film Equation*, DCDS-B, 18(5):1305-1321, 2013. (Undergraduate work)

INVITED TALKS

- The Stability of Model Shocks and the Landau Law of Decay* UC Davis PDE Seminar, UC Davis, Jun 8, 2023,
- On the distribution of heat in a steady magnetic field* Simons Collaboration on Hidden Symmetries and Fusion Annual Team Meeting, Mar 24, 2023,
- The Stability of Model Shocks and the Landau Law of Decay* The 8th KTGU Mathematics Workshop for Young Researchers, Kyoto University, Jan 31, 2023.
- On the distribution of heat in a steady magnetic field* Simons Collaboration on Hidden Symmetries and Fusion Power Weekly Meeting, Jan 5, 2023,
- On the magnetic confinement of a plasma* Hunter College Applied Math Seminar, December 8, 2022,
- The Stability of Model Shocks and the Landau Law of Decay* CUNY GC Harmonic Analysis & PDE Seminar, Nov 4, 2022,
- Flexibility and rigidity of steady fluid motion and the distribution of heat in a fibered magnetic field* Duke University, November 2, 2022,
- The Stability of Model Shocks and the Landau Law of Decay* Simons Center Workshop on Small Scale Dynamics in Fluid Motion, June 20, 2022,
- The Stability of Model Shocks and the Landau Law of Decay* AMS JMM Special Session on Fluid Mechanics, April 6, 2022,
- The Stability of Model Shocks and the Landau Law of Decay* Penn State PDE Seminar, March 2, 2022,
- Flexibility and Rigidity of Fluid Equilibria* Simons Collaboration on Hidden Symmetries and Fusion Power (Virtual) Annual Team Meeting, June 2, 2021,
- The Stability of Model Shocks and the Landau Law of Decay* Princeton Analysis Seminar, April 26, 2021,
- Flexibility and Rigidity in Steady Fluid Motion*, ICL/UCL joint Pure Analysis and PDE Seminar, Dec 11 2020,
- On Quasisymmetric Plasma Equilibria With Small Force*, Simons Collaboration on Hidden Symmetries and Fusion Power (Virtual) Annual Team Meeting, August 4, 2020,
- Construction of approximate quasisymmetry equilibria sustained by a small force*, Simons Collaboration on Hidden Symmetries and Fusion Power Weekly Meeting, April 6, 2020,
- 3D gravity water waves with vorticity*, Courant Analysis Seminar, Feb 6, 2020
- 3D gravity water waves with vorticity*, SIAM Conference on Analysis of Partial Differential Equations (PD19), December 12, 2019
- 3D gravity water waves with vorticity*, Princeton Fluids Seminar, Oct 3, 2019
- 3D gravity water waves with vorticity*, USC Seminar, May 2019
- A priori estimates for a relativistic liquid*, SIAM Conference on Analysis of Partial Differential Equations, Baltimore, MD, December 2017.

SELECTED
AWARDS

- *William Kelso Morrill Award*, May 2018. Teaching award.
- *Professor Joel Dean Award*, May 2016. Teaching award.
- *Krieger School of Arts and Sciences, "Owens Fellowship"*, Sept. 2013-Sept. 2016. Awarded to the department's most competitive applicants.
- *NSERC Postgraduate Scholarship*, Sept. 2013-May 2014.

TEACHING
EXPERIENCE

Princeton University: Instructor

Math 322: Introduction to Differential Equations, Spring 2022

Math 104: Calculus 2, Fall 2021

Johns Hopkins University: Instructor

Math 302: Differential equations with applications, Summer 2018 (online)

Math 302: Differential equations with applications, Summer 2016 (online)

Math 302: Differential equations with applications, Summer 2015 (online)

Math 108: Calculus 1 (Physical Sciences & Engineering), Summer 2014.

Johns Hopkins University: Graduate Teaching Assistant

Math 439: Introduction to differential geometry, Fall 2018.

Math 201: Linear algebra, Spring 2018

Math 109: Calculus for physical sciences and engineering, Fall 2017

Math 302: Differential equations with applications, Spring 2017

Math 201: Linear algebra, Fall 2016

Math 302: Differential equations with applications, Spring 2016

Math 302: Differential equations with applications, Fall 2015

Math 109: Calculus for physical sciences and engineering, Spring 2015

Math 108: Calculus 1, Fall 2014

Math 108: Calculus 1, Fall 2013

University of Toronto, Teaching Assistant

Math 337: Introduction to Real Analysis, Fall 2012

Math 133: Calculus and linear algebra for commerce students, Fall 2012 and Spring 2013

Math 188: Linear algebra for engineering students, Fall 2012

Math 135: Calculus for life sciences, Fall 2010-Spring 2012