Patrick Flynn

Contact Information

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Citizenship

United States of America

Research Interests

Partial differential equations, kinetic theory, fluid equations

Education

Brown University
Ph.D. in Applied Mathematics (2018-2023)
M.S. in Applied Mathematics (2020)
Advisor: Benoit Pausader

Oregon State University
B.S. in Mathematics and Physics (2014-2018)
Summa Cum Laude

Employment

University of California, Los Angeles
Hedrick Assistant Adjunct Professor (2023-Present, currently on leave)

Simons Laufer Mathematical Sciences Institute (formerly MSRI)
"Kinetic Theory: Novel Statistical, Stochastic and Analytical Methods,"
Postdoc Huneke (Fall 2025)

Publications and Preprints

1. Linear decay of the beta-plane equation near Couette flow on the plane (with Jacob Bedrossian and Sameer Iyer). *arXiv preprint* arXiv:2511.00667 (2025). link
2. Negative regularity mixing for random volume preserving diffeomorphisms (with Jacob Bedrossian and Sam Punshon-Smith). *arXiv preprint* arXiv:2410.19251 (2024). link. (Submitted)
3. Local well-posedness of the Vlasov-Poisson-Landau System and related models. *Kinetic and Related Models* 18.4 (2025): 583-608. link
4. The massless electron limit for the Vlasov-Poisson-Landau system (with Yan Guo). *Communications in Mathematical Physics* 405.2 (2024): 27. (2024). link
5. Scattering map for the Vlasov–Poisson system (with Zhimeng Ouyang, Benoit Pausader, and Klaus Widmayer). *Peking Mathematical Journal* (2021): 1-28. link
6. The vanishing surface tension limit of the Muskat problem (with Huy Q. Nguyen). *Communications in Mathematical Physics* 382.2 (2021): 1205-1241. link
7. Self-organized clusters in diffusive run-and-tumble processes (with Quinton Neville, and Arnd Scheel). *Discrete and Continuous Dynamical Systems-Series S* 13.4 (2019): 1187-1208. link

Invited Talks

Brin Mathematics Research Center, University of Maryland, workshop on Random Dynamical Systems, PDEs, and Stochastic Analysis (July 2025)

University of Wisconsin Madison, Workshop on Kinetic Theory and Fluids (March 28)

University of Southern California, Analysis and PDE Seminar (April 2025)

Brown University PDE Seminar (February 2025)

UC Davis PDE and Applied Math Seminar (October 2023)

New England Dynamics Seminar, UMass Amherst (April 2023)

Princeton University Fluids Seminar (February 2023)

Boston University Dynamics Seminar (September 2022)

Brown University PDE Seminar (September 2022)

University of Barcelona, Mathematical Analysis Seminar (June 2022)

University of Michigan, Differential Equations Seminar (March 2022)

Online North East PDE and Analysis Seminar (February 2021)

Teaching Experience

Spring	2025	Instructor, Math 135, Partial Differential Equations, UCLA
Winter	2025	Instructor, Math 132H, Honors Complex Analysis, UCLA
Fall	2024	Instructor, Math 135, Ordinary Differential Equations, UCLA
Spring	2024	Instructor, Math 136, Partial Differential Equations, UCLA
Winter	2024	Instructor, Math 135, Ordinary Differential Equations, UCLA
Fall	2023	Instructor, Math 31B, Integration and Infinite Series, UCLA
Fall	2023	Instructor, Math 135, Ordinary Differential Equations, UCLA
Fall	2022	Instructor, Single Variable Calculus, Part II, Brown University
Spring	2020	Teaching Assistant, Applied Partial Differential Equations, Brown University
Fall	2019	Teaching Assistant, Applied Partial Differential Equations, Brown University

Honors and Awards

2020–2023	National Science Foundation Graduate Research Fellowship
2018–2020	Presidential Fellowship, Brown University

Outreach and service

2025	Organizer for professional development series at SLMath
2024	Mentor for reading project for an undergraduate student
2020	Mentor for applied math directed reading program on stochastic control
2019	Led student workshop on the Rayleigh-Taylor instability at applied math graduate student retreat
2021-current day	Referee for the following journals: Quarterly of Applied Math, Nonlinearity, Studies in Applied Mathematics, Archive of Rational Mechanics and Analysis, Memoirs of the AMS, Annals of PDE, SIAM Journal of Mathematical Analysis.

Undergraduate Research Experience

2018 Computational Physics Student Summer Workshop
Advisors: Juan Saenz, Jesse Canfield
Los Alamos National Laboratory

2017 Complex Systems REU
Advisor: Arnd Scheel, Department of Mathematics
University of Minnesota, Twin Cities