Benjamin Pineau

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Appointments

- **Courant Institute for Mathematical Sciences** — Simons Junior Postdoctoral Fellow
  September 2024 - August 2027
- **Simons Society of Fellows** — Simons Junior Postdoctoral Fellow
  September 2024 - August 2027

Education

- **University of California, Berkeley** — Ph.D. in Mathematics
  September 2019 - May 2024
- **University of Alberta** — Bachelor of Science, Mechanical Engineering
  September 2014 - May 2019

Teaching Experience

- **Graduate Student Instructor, UC Berkeley Spring 2024**: Math 1B (Calculus)
- **Graduate Student Instructor, UC Berkeley Spring 2023**: Math 53 (Multivariable Calculus)
- **Graduate Student Instructor, UC Berkeley, Spring 2022**: Math 1B (Calculus)
- **Graduate Student Instructor, UC Berkeley, Fall 2021**: Math 1B (Calculus)
- **Reader/Grader, UC Berkeley, Spring 2020**: Math 105 (Analysis II)
- **Teaching Assistant, University of Alberta, Fall 2017**: Math 117 (Honors Calculus)
- **Teaching Assistant, University of Alberta, Spring 2017**: Math Help Center
- **Graduate Student Researcher, UC Berkeley**: Fall 2022 and Fall 2023
- **NSERC Undergraduate Student Research Award**: Summers of 2016, 2017 and 2018

Academic Service

- **Co-organizer for the HADES seminar, UC Berkeley**: Spring 2024
- **Co-organizer for the HADES seminar, UC Berkeley**: Fall 2023

- **Referee for academic journals**:

  Archive for Rational Mechanics and Analysis, Advances in Mathematics, Annals of PDE. Communications in Nonlinear Science and Numerical Simulation, Journal of the European Mathematical Society, Partial Differential Equations and Applications, Zeitschrift für Angewandte Mathematik und Physik.

Selected Awards

- Junior Postdoctoral Fellow in Simons Society of Fellows- 2024
- Herb Alexander Prize in Pure Mathematics- 2024
- Berkeley Fellowship - 2019
- Jason Lang Scholarship - 2018
- Jason Lang Scholarship - 2017
- Robert Tegler Undergraduate Scholarship - 2017
- A University of Alberta Undergraduate Scholarship - 2017
- Jason Lang Scholarship - 2016
- A University of Alberta Undergraduate Scholarship - 2016
- Louise McKinney Scholarship - 2015
- University of Alberta Academic Excellence Scholarship - 2014
- Alexander Rutherford Scholarship - 2014

Publications and preprints

1. *A Trace formula for the wave propagator on Schwarzschild-de Sitter backgrounds (in final preparation)*, with Izak Oltman.
2. *Cheeger's constant for the Gabor transform and ripples (in final preparation)*, with Rima Alaifari, Mitchell Taylor and Matthias Wellershoff.
3. *On the optimal Sobolev threshold for evolution equations with rough nonlinearities*, with Mitchell A Taylor. arXiv:2505.14966 [math.AP].
4. *Global solutions for cubic quasilinear ultrahyperbolic Schrödinger flows*, with Mihaela Ifrim and Daniel Tataru. arXiv:2504.06230 [math.AP]. Accepted in **Duke Mathematical Journal.**
5. *Sharp well-posedness for the free boundary MHD equations*, with Mihaela Ifrim, Daniel Tataru and Mitchell A Taylor. arXiv:2412.15625 [math.AP].
6. *Low regularity solutions for the general quasilinear ultrahyperbolic Schrödinger equation*, with Mitchell A Taylor. arXiv:2310.19221 [math.AP]. Accepted in **Archive for Rational Mechanics and Analysis**.

7. *Sharp Hadamard local well-posedness, enhanced uniqueness and pointwise continuation criterion for the incompressible free boundary Euler equations*, with Mihaela Ifrim, Daniel Tataru and Mitchell A Taylor. Accepted in **Annals of PDE**.arXiv:2309.05625 [math.AP].
8. *Stable phase retrieval in function spaces*, with Daniel Freeman, Timur Oikhberg, and Mitchell A Taylor. Accepted in **Math. Ann**. arXiv:2210.05114 [math.FA].
9. *Examples of Hölder-stable phase retrieval*, with Michael Christ and Mitchell A Taylor. Accepted in **Math. Res. Lett**. arXiv:2112.04648 [math.AP].
10. *Global well-posedness for the generalized derivative nonlinear Schrödinger equation*, with Mitchell A Taylor. Accepted in **Nonlinearity** arXiv:2112.04648 [math.AP].
11. *No pure capillary solitary waves exist in 2D finite depth*, with Mihaela Ifrim, Daniel Tataru and Mitchell A Taylor. Accepted in **SIAM Journal on Mathematical Analysis**. arXiv:2104.07845 [math.AP].
12. *On Prodi–Serrin type conditions for the 3D Navier–Stokes equations*, with Xinwei Yu, **Nonlinear Analysis**. Vol. 190, (2020), link.
13. *A New Prodi–Serrin Type Regularity Criterion in Velocity Directions*, with Xinwei Yu. **Journal of Mathematical Fluid Mechanics**. Vol. 20, pages 1737–1744 (2018), link.
14. *New Regularity Criteria for the Navier-Stokes Equations in Terms of Pressure*, with Xinwei Yu. arXiv:1910.08911 [math.AP].

Invited Conference Talks and Seminar Talks

- BIRS Workshop: Dynamics in Geometric Dispersive Equations and the effects of Trapping, Scattering and weak Turbulence, III November 29 - December 4, 2026. Banff, Canada
- Oberwolfach workshop: Nonlinear Waves and Dispersive Equations March 1-6, 2026. Oberwolfach, Germany
- The 21st Prairie Analysis Seminar. November 7-8, 2025. Kansas State University, Manhatthan, KS, USA.
- Second Atlantic Conference in Nonlinear PDEs. November 3-7, 2025. Instituto Superior Técnico - Universidade de Lisboa, Lisbon, Portugal
- Princeton Analysis seminar. November 3rd, 2025. Princeton University, Princeton, NJ, USA
- Conference on Nonlinear Dispersive Equations: Advances and Perspectives. May 12-16, 2025. Centre National de la Recherche Scientifique, Marseille, France
- Plenary speaker at FIM Workshop on Phase Retrieval and Banach Lattices. May 5-9, 2025. ETH, Zürich, Switzerland
- Simons Society of Fellows Retreat. March 31-April 2, 2025. Savannah, Georgia, USA
- Conference on Mathematics of Wave Phenomena. February 24-28, 2025. KIT, Karlsruhe, Germany.
- Calderón-Zygmund Analysis Seminar. Dec. 2nd, 2024. University of Chicago, Chicago, IL, USA
- NYU Analysis Seminar. September 19, 2024, Courant Institute for Mathematical Sciences, New York City, NY, USA.
- Plenary speaker at Lattice Structures in Analysis and Applications Conference. May 6-10, 2024. ICMAT, Madrid, Spain.
- AMS Spring Central Sectional Meeting on Nonlinear Waves. April 20-21, 2024. University of Wisconsin-Milwaukee, Milwaukee, WI, USA
- UCLA Analysis and PDE seminar. November 28th, 2023. UCLA, Los Angeles, CA, USA
- Oberwolfach seminar: Scattering Resonances in Quantum Mechanics, General Relativity and Hyperbolic Dynamics . November, 2023. Oberwolfach, Germany
- ETH Zürich Analysis seminar. Nov. 14th, 2023. ETH, Zürich, Switzerland
- UC Berkeley Analysis and PDE seminar. Sept. 25th, 2023, Berkeley, CA, USA
- MSRI, FD2 Reunion seminar. August 10th, 2023. Simons Laufer Institute, Berkeley, CA, USA
- Wisconsin PDE seminar. April. 24th, 2023. University of Wisconsin–Madison, Madison, WI, USA
- ICMAT PDE and Fluid Mechanics seminar. Nov. 3rd, 2022. ICMAT, Madrid, Spain
- Oberwolfach seminar: Free Boundary Problems in Fluid Dynamics . October, 2022. Oberwolfach, Germany
- Harmonic Analysis and Differential Equations Seminar (HADES). May 10th, 2022. UC Berkeley, Berkeley, CA, USA
- PDE Learning Seminar (Fall 2021) Nonlinear wave equations and general relativity. Nov. 3rd, 2021; via Zoom. UC Berkeley, Berkeley, CA, USA
- Harmonic Analysis and Differential Equations Seminar (HADES). Oct. 26th, 2021. UC Berkeley, Berkeley, CA, USA
- MSRI program on Mathematical problems in fluid dynamics. Spring 2021. MSRI, Berkeley, CA, USA
- MSRI, Mathematical problems in fluid dynamics graduate student working group. May. 12th, 2021; via Zoom.
- MSRI program on Mathematical problems in fluid dynamics. Spring 2021. MSRI, Berkeley, CA, USA
- Seminar on wave packets in dispersive PDE. Nov. 17th, 2020; via Zoom. UC Berkeley, Berkeley, CA, USA
- Introduction to water waves, MSRI summer school. July-August 2020
- Harmonic Analysis and Differential Equations Seminar (HADES). Nov. 19th, 2019. UC Berkeley, Berkeley, CA, USA
- The XI Americas Conference on Differential Equations and Nonlinear Analysis. August 19, 2017, University of Alberta, Edmonton, Canada