

# Joseph K. Miller

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University of Texas - Austin,  
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## EDUCATION

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- **University of Texas - Austin**  
Ph.D. Candidate in Mathematics  
Advised by Nataša Pavlović  
*August 2018 - May 2024*
- **University of California - Los Angeles**  
B.S with Honors in Mathematics  
*September 2015 - July 2018*

## TEACHING EXPERIENCE

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- **Teaching Assistant**  
Introduction to Real Analysis (M361K)  
Taught by Mark Daniels at UT - Austin  
*Spring, 2022 (Teaching Feedback)*
- **Workshop Assistant**  
RTG Summer Program 2021 Analysis & PDE  
With P. Isett and F. Maggi at UT - Austin  
*Summer, 2021*
- **Undergraduate Mentor**  
Directed reading project mentor at UT - Austin  
*Fall 2020 - Spring 2021 (Sam Perales), Spring 2020 (Olivia Ott)*
- **Prelim Review Instructor**  
Lead a week-long review session for the graduate preliminary exam on real analysis at UT - Austin  
*Summer, 2020*
- **Teaching Assistant**  
With the Los Angeles Math Circle  
*Fall 2017 - Spring 2018*
- **Grader**  
For linear algebra and multivariable calculus  
*Fall 2016 - Spring 2017*

## PUBLICATIONS

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- [4] Cárdenas, E., Miller, J. K., Pavlović, N. *On the effective dynamics of Bose-Fermi mixtures.* arXiv:2309.04638. (2023).
- [3] Miller, J. K., Nahmod, A. R., Pavlović, N., Rosenzweig, M., Staffilani, G. *A rigorous derivation of the Hamiltonian structure for the Vlasov equation.* Forum of Mathematics, Sigma, 11, e77. (2023).
- [2] Ampatzoglou, I., Miller, J. K., Pavlović, N., *A Rigorous Derivation of a Boltzmann System for a Mixture of Hard-Sphere Gases,* SIMA, Vol. 54, Iss. 2, (2022).
- [1] Lyons, J., Miller, J., *The derivative of a solution to a second order parameter dependent boundary value problem with a nonlocal integral boundary condition.* Journal of Mathematical and Statistical Science, Vol. 1, Iss. 2, (2015).

## AWARDS & GRANTS

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- **Frank Gerth III Teaching Excellence Award**  
Teaching award at UT - Austin  
*May, 2023*
- **Oberwolfach Leibniz Graduate Student Grant**  
Travel funding to Oberwolfach. Deterministic Dynamics and Randomness in PDE (2221)  
*May, 2022*
- **Brown University & ICERM**  
Visiting scholar for the semester on Hamiltonian Methods in Dispersive and Wave Evolution Equations  
*Fall, 2021*
- **RTG Graduate Fellowship**  
NSF Grant DMS-1840314, two semesters no teaching load and summer support  
*Spring 2021 - Fall 2021*
- **Provost's Graduate Excellence Fellowship**  
5 year fellowship, 3 years of no teaching at UT - Austin  
*August 2018 - July 2023*
- **VIGRE REU**  
NSF Research Experience Undergraduate  
With Prof. John Garnett on harmonic analysis at UCLA  
*Summer, 2017*

## CONFERENCES

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- **Monash University, AUS**  
Nonlinear dispersive and wave equations (Invited Short Presentation)  
A conference in honor of Carlos Kenig  
*December 10th - 15th, 2023*
- **Simons Collaboration on Wave Turbulence**  
Annual Meeting in NYC (Invited Participant)  
*November 30th - December 1st*
- **Kansas State University**  
The 19th Prairie Analysis Seminar (Poster Presentation)  
*November 3rd - 4th, 2023*
- **MIT**  
Summer School on Wave Turbulence (Invited Participant)  
Sponsored by the Simons Collaboration on Wave Turbulence  
*July 24th - 28th, 2023*
- **Imperial College London, UK**  
Stability and dynamics in fluid mechanics and kinetic theory (Invited Short Talk)  
*July 10th - 14th, 2023*
- **Simons Collaboration on Wave Turbulence**  
Annual Meeting in NYC (Invited Participant)  
*December 1st - 2nd, 2022*

- **MIT Focused Research Group (FRG)**  
New Challenges in the Derivation and Dynamics of Quantum Systems (Invited Collaborator)  
(Unable to attend due to COVID)  
*November 19th, 2022*
- **Banff International Research Station (BIRS), CA**  
Recent Progress in Kinetic and Integro-Differential Equations (Invited Participant)  
*November 6th - 11th, 2022*
- **Brown University & ICERM**  
Semester Program on Harmonic Analysis and Convexity (Invited Participant)  
Workshop: Probabilistic Methods in Geometry and Analysis  
*October 17th - 21st, 2022*
- **Simons Collaboration on Wave Turbulence, IT**  
Wave Turbulence and Beyond: Summer School in Torino, IT  
(Unable to attend due to illness)  
*July 17th - July 21st, 2022*
- **Methods and Models of Kinetic Theory, IT**  
11th Summer School held in Pesaro, IT (Poster)  
*June 12th - June 18th, 2022*
- **Oberwolfach, GE**  
Deterministic Dynamics and Randomness in PDE, ID: 2221 (Invited Short Talk)  
(Was also Video Conference Organizer)  
*May 22nd - May 28th, 2022*
- **Simons Collaboration on Wave Turbulence**  
Annual Meeting in NYC (Invited Participant)  
*December 2nd - December 3rd, 2021*
- **Brown University & ICERM**  
Hamiltonian Methods in Dispersive and Wave Evolution Equation (Visiting Scholar)  
*October 18th - December 10th, 2021*
- **Institut d'Etudes Scientifiques de Cargèse (IESC), FR**  
Advanced Summer School on Mathematical Fluid Dynamics (Poster Presentation)  
*August 13th - August 21st, 2021*
- **MSRI**  
CRM-PIMS Summer school in probability (Invited Participant)  
*May 24th - June 18th, 2021*
- **University of Texas - Austin**  
RTG Summer Program in PDE and Analysis (TA/Participant)  
*May 17th - May 21st, 2021*
- **Univesity of Texas - Austin**  
Texas Analysis and Mathematical Physics (Short Contributing Talk)  
*April 19th - April 11th, 2021*
- **University of Ohio/University of Kentucky**  
Ohio River Analysis Meeting (Short Contributing Talk)  
*March 20th - March 21st, 2021*

- **University of Pennsylvania**  
Non-linear Dynamics in Quantum Mechanics (Participant)  
*October 1st - October 2nd, 2020*
- **ENS de Lyon, FR**  
Scaling Limits in Kinetic Theory (Participant)  
*September 30th - October 4th, 2019*
- **University of Texas - Austin**  
Fitting Smooth Functions to Data (Participant)  
*August 5th - August 9th, 2019*
- **Universitat de Barcelona, ES**  
Barcelona Analysis Conference (Participant)  
*June 25th - June 28th, 2019*
- **EMS Summer School in Applied Mathematics, CZ**  
Mathematical Aspects of Fluid Flows, Kàcov, CZ (Participant)  
*May 26th - May 31st, 2019*

## VISITING PRESENTATIONS

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- **CUNY Graduate Center**  
Harmonic Analysis and PDE seminar  
*December 1st, 2023*
- **Emory University**  
Analysis Seminar  
*August, 2022*
- **University of California - Davis**  
Student Run Analysis & PDE Seminar  
*February 25th, 2021*

## SKILLS & LANGUAGES

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- **Languages**
  - English: Native
  - Standard Chinese: Proficient (HSK 2.0, Level 5)
  - French: Reading only
- **Programming Languages**
  - Python: Proficient in the NumPy and PyTorch libraries
  - MATLAB: Proficient
- **Other Skills**
  - SCUBA Diving: PADI Open Water Certified, 100+ hours experience
  - Rock Climbing: Outdoor lead sport/traditional climbing, 50+ hours of experience