

## Luke Peilen

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PERSONAL AND CONTACT INFORMATION	DOB: 05.04.1996 1805 N. Broad St. # 544 Philadelphia, PA 19122 USA	Pronouns: they/them Phone Number: (612) 412-8560 Email: <a href="mailto:luke.peilen@temple.edu">luke.peilen@temple.edu</a>
RESEARCH INTERESTS	Probability and Analysis, emphasis on problems from Statistical Physics	
EMPLOYMENT	<b>Temple University, Department of Mathematics</b> Research Assistant Professor	2023-present
EDUCATION	<b>New York University, Courant Institute</b> Ph.D. in Mathematics, awarded May 2023 Thesis: <i>Statistical Mechanics of Log and Riesz Interactions</i> Advisor: Prof. Sylvia Serfaty	2018-2023
	<b>Yale University</b> M.S., B.S. Mathematics, cum laude Thesis: <i>Spherical Harmonics and Minimizers of Riesz-type Energies on <math>S^2</math></i> Advisor: Prof. Stefan Steinerberger	2014-2018
PUBLICATIONS	<p>L. Peilen, S. Serfaty. Local laws and fluctuations for super-Coulombic Riesz gases, with an appendix by X. Ros-Oton. <a href="https://arxiv.org/abs/2511.18623">arXiv: 2511.18623</a>, November 2025.</p> <p>D. Padilla-Garza, L. Peilen, E. Thoma. Poisson Statistics for Coulomb Gases at Intermediate Temperature Regimes. <a href="https://arxiv.org/abs/2507.08198">arXiv: 2507.08198</a>, July 2025, submitted.</p> <p>K. Isham, N. Kaplan, S. Kimport, R. Lawrence, L. Peilen, M. Weinreich. Configurations of 10 points and their incidence varieties. <a href="https://arxiv.org/abs/2507.09829">arXiv: 2507.09829</a>, July 2025, submitted.</p> <p>L. Peilen. On the Maximum of the Potential of a General Two-Dimensional Coulomb Gas. <i>Electronic Communications in Probability</i>, vol. 30, 2025, pp. 1-17.</p> <p>L. Peilen. Local laws and a mesoscopic CLT for <math>\beta</math>-ensembles. <i>Comm. Pure Appl. Math</i>, vol. 77, no. 4, 2024, pp. 2452-2567.</p> <p>D. Padilla-Garza, L. Peilen, E. Thoma. Emergence of a Poisson process in weakly interacting particle systems. <a href="https://arxiv.org/abs/2405.02625">arXiv: 2405.02625</a>, May 2024, submitted.</p> <p>A. Cerbu, E. Gunther, M. Magee, L. Peilen. The cycle structure of a Markoff automorphism over finite fields. <i>Journal of Number Theory</i>, vol. 211, 2020, pp. 1-27.</p> <p>A. Cerbu, S. Marcus, L. Peilen, D. Ranganathan, A. Salmon. Topology of tropical moduli of weighted stable curves. <i>Advances in Geometry</i>, vol. 20, no. 4, 2020, pp. 445-462.</p> <p>N. Kaplan, S. Kimport, R. Lawrence, L. Peilen, M. Weinreich. Counting arcs in projective planes via Glynn's algorithm. <i>Journal of Geometry</i>, vol. 108, no. 3, 2017, pp. 1013-1029.</p>	

COURSE INSTRUCTOR EXPERIENCE	Spring	2026	Temple MATH 3032: Mathematical Statistics	
	Spring	2026	Temple MATH 1042: Calculus II	
	Fall	2025	Temple MATH 3131/5041: Real Analysis	
	Spring	2025	Temple MATH 2101: Linear Algebra	
	Fall	2024	Temple MATH 4033: Probability Theory II	
	Spring	2024	Temple MATH 3031: Probability Theory I	
	Fall	2023	Temple MATH 1041: Calculus I	
	Summer	2022	NYU MATH-UA.132: Mathematics for Economics II	
	Summer	2021	Thinking and Problem Solving: Math in the Real World	
	Summer	2020	Thinking and Problem Solving: Math in the Real World	
	Summer	2019	Thinking and Problem Solving: Math in the Real World	
			<i>Designed and taught a three week summer course for high school students in probability, graph theory, and game theory as part of the Columbia University Summer Program for High School students</i>	
	GRADUATE TEACHING ASSISTANT EXPERIENCE	Fall	2022	Graduate Teaching Assistant, NYU MATH-UA.0325 Analysis
		Spring	2022	Graduate Teaching Assistant, NYU MATH-UA.0325: Analysis
Fall		2021	Graduate Teaching Assistant, NYU MATH-UA.0262: Ordinary Differential Equations	
Spring		2021	Graduate Teaching Assistant, NYU MATH-UA.0121: Calculus I	
Fall		2020	Graduate Teaching Assistant, NYU MATH-UA.0325: Analysis	
Fall		2019	Teaching Assistant, NYU Putnam Exam seminar	
MENTORSHIP	2025		Diamond Peer Teachers Program at Temple University Student: Tommy Pham Provided mentorship in Linear Algebra course, overseeing recitation sections and aiding pedagogical development	
	2024-2025		Research Mentor, Science Scholars Program at Temple University Student: Sarah Lampreich <i>starting a Ph.D. in physics at Michigan State University this fall</i> Project: The log determinant of a novel nonHermitian random matrix ensemble.	
HONORS AND AWARDS	2025-2026		Project NExT Fellow	
	2022-2023		Glenn Y. Louie Endowed Fellowship <i>awarded to a Ph.D. student for significant contributions to the mathematical sciences</i>	
	2021-2022		Henning Biernmann Prize <i>awarded to a Ph.D. student who has made outstanding contributions to education or service to the department.</i>	
	2021-2022		Peter Lax Fellowship <i>awarded to an outstanding Ph.D. student</i>	
	2019-2022		NSF Graduate Research Fellowship	
INVITED TALKS			<i>A Transport Method for Riesz Gases</i> , SIAM Conference on Analysis of Partial Differential Equations, Pittsburgh. (November 2025)	
			<i>Poisson behavior for Coulomb Gases</i> , Constructive Functions 2025, Vanderbilt University. (May 2025)	
			<i>Poisson behavior for Coulomb Gases</i> , University of Delaware Probability Seminar. (April 2025)	

*Local Laws and Fluctuations for Log and Riesz Gases*, Institut Mittag-Leffler, Stockholm, Sweden. (October 2024)

*Local Laws and Fluctuations for Riesz Gases*, AMS Southeastern Sectional Meeting Fall 2024, Georgia Southern University. (October 2024; *cancelled due to Hurricane Helene*)

*Statistical Mechanics of Log and Riesz Gases*, Princeton Probability Seminar. (February 2024)

*Local Laws and Fluctuations for Log Gases*, 2023 Canadian Mathematical Society Winter Meeting, Montréal, Québec, CA. (December 2023)

*Statistical Mechanics of Log and Riesz Interactions*, Penn-Temple Probability Seminar. (September 2023)

CONTRIBUTED  
TALKS

*Poisson behavior for Coulomb Gases*, 24th Northeast Probability Seminar, CUNY-Graduate Center. (November 2025)

*Local Laws and Fluctuations for Riesz Gases*, School on Stochastic Interacting Particle Systems and Random Matrices 2025, Erdős Center - HUN-REN Rényi Institute. (June 2025)

*Local Laws and Fluctuations for Riesz Gases*, CRM-PIMS Summer School in Probability 2024, Université de Montréal. (July 2024)

*Statistical Mechanics of Log and Riesz Interactions*, SSMC 2024, Ohio State University. (July 2024, delivered virtually)

*Local Laws and Fluctuations for Log Gases*, QuMA 2024, Bilbao, Spain. (June 2024, delivered virtually)

*Local Laws and a Mesoscopic CLT for  $\beta$ -ensembles*, 22nd Northeast Probability Seminar, Courant Institute of Mathematical Sciences. (November 2023)

*Local Laws and a Mesoscopic CLT for beta-ensembles*, AMS Eastern Sectional Meeting Fall 2023, University at Buffalo. (September 2023)

PROFESSIONAL  
ACTIVITIES

Organizer, Penn/Temple Probability seminar, 2024-present

Reviewer for *Journal of Mathematical Physics* and *Mathematical Reviews*

Member, Spectra Outreach and Communications committee, AY 2024-2025

Organizer, Courant Graduate Student and Postdoc Seminar, AY 2022-2023

Courant DEI Reading Group Member, AY 2021-2022 and 2022-2023

Courant Student Organization President, AY 2020-2021

Courant Student Organization Vice President, AY 2019-2020

RELEVANT  
SKILLS

Languages: Reading knowledge of French, Ancient Greek and Latin