

Luke Peilen

PERSONAL AND CONTACT INFORMATION	DOB: 05.04.1996 1 College Street Worcester, MA 01610 USA	Citizenship: US Phone Number: (612) 412-8560 Email: lpeilen@holycross.edu
RESEARCH INTERESTS	Probability and analysis, with an emphasis on problems from statistical physics	
EMPLOYMENT	College of the Holy Cross, Department of Mathematics and Computer Science Visiting Assistant Professor Temple University, Department of Mathematics Research Assistant Professor	2026-present 2023-2026
EDUCATION	New York University, Courant Institute Ph.D. in Mathematics, awarded May 2023 Thesis: <i>Statistical Mechanics of Log and Riesz Interactions</i> Advisor: Prof. Sylvia Serfaty Yale University M.S., B.S. Mathematics, cum laude Thesis: <i>Spherical Harmonics and Minimizers of Riesz-type Energies on S^2</i> Advisor: Prof. Stefan Steinerberger	2018-2023 2014-2018
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	
PUBLICATIONS	C. D. Guera, G. Lambert, L. Peilen. Mesoscopic transitions for β-ensembles at intermediary temperature. arXiv:2609.25301, September 2026. L. Peilen, S. Serfaty. Local laws and fluctuations for super-Coulombic Riesz gases, with an appendix by X. Ros-Oton. arXiv: 2511.18623, November 2025. (Under revision in <i>Probability and Mathematical Physics</i>.) D. Padilla-Garza, L. Peilen, E. Thoma. Poisson Statistics for Coulomb Gases at Intermediate Temperature Regimes. arXiv: 2507.08198, July 2025. (Under revision in <i>Annales de l'Institut Henri Poincaré, Probabilités et Statistiques</i>.) K. Isham, N. Kaplan, S. Kimport, R. Lawrence, L. Peilen, M. Weinreich. Configurations of 10 points and their incidence varieties. <i>Discrete and Computational Geometry</i>, 2026. 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.	

L. Peilen. Local laws and a mesoscopic CLT for β -ensembles. *Comm. Pure Appl. Math*, vol. 77, no. 4, 2024, pp. 2452-2567.

D. Padilla-Garza, L. Peilen, E. Thoma. Emergence of a Poisson process in weakly interacting particle systems. [arXiv: 2405.02625](https://arxiv.org/abs/2405.02625), May 2024, submitted.

A. Cerbu, E. Gunther, M. Magee, L. Peilen. The cycle structure of a Markoff automorphism over finite fields. *Journal of Number Theory*, vol. 211, 2020, pp. 1-27.

A. Cerbu, S. Marcus, L. Peilen, D. Ranganathan, A. Salmon. Topology of tropical moduli of weighted stable curves. *Advances in Geometry*, vol. 20, no. 4, 2020, pp. 445-462.

N. Kaplan, S. Kimport, R. Lawrence, L. Peilen, M. Weinreich. Counting arcs in projective planes via Glynn's algorithm. *Journal of Geometry*, vol. 108, no. 3, 2017, pp. 1013-1029.

COURSE INSTRUCTOR EXPERIENCE	Fall	2026	Holy Cross STAT 220: Statistics
	Fall	2026	Holy Cross MATH 135: Calculus I
	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.
INVITED TALKS			<i>Local Laws and Fluctuations for Super-Coulombic Riesz Gases</i> , Tufts Analysis Seminar.

(September 2026)

Local Laws and Fluctuations for Riesz Gases, AMS Eastern Sectional Meeting Spring 2026, Boston College. (March 2026)

Local Laws and Fluctuations for Super-Coulombic Riesz Gases, Penn-Temple Probability Seminar. (February 2026)

A Transport Method for Riesz Gases, SIAM Conference on Analysis of Partial Differential Equations, Pittsburgh. (November 2025)

Poisson behavior for Coulomb Gases, Constructive Functions 2025, Vanderbilt University. (May 2025)

Poisson behavior for Coulomb Gases, 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

A CLT for Riesz Gases, CIRM Conference on Point configurations: from statistical physics to potential theory, CIRM. (May 2026)

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 β -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

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

Member, Spectra Outreach and Communications committee, 2024-present

Organizer, Penn/Temple Probability seminar, 2024-2026

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