

CONTACT INFORMATION	<a href="mailto:rv2549@columbia.edu">rv2549@columbia.edu</a> Department of Mathematics Columbia University	
CITIZENSHIP	USA	
EDUCATION	<b>Massachusetts Institute of Technology</b> Ph.D. in Mathematics, advised by Alexei Borodin <b>Princeton University</b> A.B. in Mathematics, <i>summa cum laude</i> with highest honors in mathematics • Certificate (minor) in Applied and Computational Mathematics • GPA: 4.0 (departmental), 3.90 (overall)	2018-2023 2014-2018
POSITIONS	<b>Columbia University</b> Ritt Assistant Professor (non tenure track) <b>Royal Institute of Technology (KTH)</b> Postdoctoral researcher, mentored by Maurice Duits	2024- 2023-2024
PAPERS AND PREPRINTS (CHRONOLOGICAL BY ARXIV SUBMISSION)	<p>[1] Vineet Gupta, Uma Roy, and Roger Van Peski. A generalization of Tokuyama’s formula to the Hall-Littlewood polynomials. <i>The Electronic Journal of Combinatorics</i>, 22(2):P2–11, 2015.</p> <p>[2] Steven J Miller, Carsten Peterson, Carsten Sprunger, and Roger Van Peski. The bidirectional ballot polytope. <i>Integers</i>, 18, 2018.</p> <p>[3] Paula Burkhardt, Peter Cohen, Jonathan DeWitt, Max Hlavacek, Steven J Miller, Carsten Sprunger, Yen Nhi Truong Vu, Roger Van Peski, and Kevin Yang. Random matrix ensembles with split limiting behavior. <i>Random Matrices: Theory and Applications</i>, 7(03):1850006, 2018.</p> <p>[4] Oscar E González, Chung Hang Kwan, Steven J Miller, Roger Van Peski, and Tian An Wong. On smoothing singularities of elliptic orbital integrals on <math>GL(n)</math> and Beyond Endoscopy. <i>Journal of Number Theory</i>, 183:407–427, 2018.</p> <p>[5] Samuel DeHority, Xavier Gonzalez, Neekon Vafa, and Roger Van Peski. Moonshine for all finite groups. <i>Research in the Mathematical Sciences</i>, 5(1):1–34, 2018.</p> <p>[6] Roger Van Peski. Spectral distributions of periodic random matrix ensembles. <i>Random Matrices: Theory and Applications</i>, 10(01):2150011, 2021.</p> <p>[7] Roger Van Peski. Limits and fluctuations of <math>p</math>-adic random matrix products. <i>Selecta Mathematica</i>, 27(5):1–71, 2021.</p> <p>[8] Andrew Ahn, Marianna Russkikh, and Roger Van Peski. Lozenge tilings and the Gaussian free field on a cylinder. <i>Communications in Mathematical Physics</i>, 396(3):1221–1275, 2022.</p> <p>[9] Andrew Ahn and Roger Van Peski. Lyapunov exponents for truncated unitary and Ginibre matrices. <i>Ann. Inst. Henri Poincaré Probab. Stat.</i>, 59(2):1029–1039, 2023.</p> <p>[10] Roger Van Peski. Hall–Littlewood polynomials, boundaries, and <math>p</math>-adic random matrices. <i>International Mathematics Research Notices</i>, 2023(13):11217–11275, 2022.</p> <p>[11] Roger Van Peski. <math>q</math>-TASEP with position-dependent slowing. <i>Electronic Journal of Probability</i>, 27:1–35, 2022.</p>	

- [12] Peter Cohen, Justine Dell, Oscar E González, Geoffrey Iyer, Simran Khunger, Chung-Hang Kwan, Steven J Miller, Alexander Shashkov, Alicia Smith Reina, Carsten Sprunger, Nicholas Triantafyllou, Nhi Truong, Roger Van Peski, Stephen Willis, and Yingzi Yang. Extending support for the centered moments of the low lying zeroes of cuspidal newforms. *arXiv preprint arXiv:2208.02625*, 2022. To appear in *Algebra and Number Theory*.
- [13] Hoi H Nguyen and Roger Van Peski. Universality for cokernels of random matrix products. *Advances in Mathematics*, 438:109451, 2024.
- [14] Roger Van Peski. What is a  $p$ -adic Dyson Brownian motion? To appear in *Ann. Inst. Henri Poincaré Probab. Stat.*. *arXiv preprint arXiv:2309.02865*, 2023.
- [15] Roger Van Peski. Local limits in  $p$ -adic random matrix theory. *Proceedings of the London Mathematical Society*, 129:e12626, 2023.
- [16] Roger Van Peski. Reflecting Poisson walks and dynamical universality in  $p$ -adic random matrix theory. *arXiv preprint arXiv:2312.11702*, 2023.
- [17] Roger Van Peski. Symmetric functions and the explicit moment problem for abelian groups. *arXiv preprint arXiv:2402.16625*, 2024. To appear in *Proceedings of the AMS*.
- [18] Roger Van Peski. The rank of a random triangular matrix over  $\mathbb{F}_q$ . *arXiv preprint arXiv:2407.19578*, 2024.
- [19] Hoi H Nguyen and Roger Van Peski. Rank fluctuations of matrix products and a moment method for growing groups. *arXiv preprint arXiv:2409.03099*, 2024.
- [20] Jiahe Shen and Roger Van Peski. Non-Archimedean GUE corners and Hecke modules. *arXiv preprint arXiv:2412.05999*, 2024.
- [21] Jiahe Shen and Roger Van Peski. Groups with pairings, Hall modules, and Hall-Littlewood polynomials. *arXiv preprint arXiv:2504.12405* 2025.
- [22] Yifeng Huang, Hoi H. Nguyen, and Roger Van Peski. Cohen-Lenstra flag universality for random matrix products. *In preparation*, 2025+.

SELECTED FELLOWSHIPS AND AWARDS	<b>NSF Graduate Research Fellowship</b>	2018-2023
	<b>MIT Presidential Fellowship</b>	2018-2019
	An Institute-wide merit award	
	<b>Phi Beta Kappa</b>	May 2018
	<b>Andrew H. Brown Prize for Outstanding Juniors in Mathematics</b>	May 2017
	Awarded by the Princeton mathematics department to three juniors (out of a class of 34)	
	<b>Top 200, William Lowell Putnam Mathematical Competition</b>	December 2015
	<b>1<sup>st</sup> Place in Algebra category, JMM Undergraduate Poster Session</b>	January 2015
	<b>Intel International Science and Engineering Fair 4<sup>th</sup> in Category Award</b>	May 2014
	<b>Outstanding Presentation Award, JMM Undergraduate Poster Session</b>	January 2014
TALKS	<b>Siemens Competition Semifinalist in Mathematics Category</b>	November 2013
	• USC Department Colloquium	April 2025
	• CUNY Probability Seminar	March 2025
	• University of Maryland Probability Seminar	February 2025
	• Columbia Probability Seminar	September 2024
	• ARNO conference (KU Leuven) [contributed talk]	April 2024
	• Leipzig integrable probability seminar	April 2024
	• UC Irvine number theory seminar	April 2024

• IHES Probability and analysis informal seminar	January 2024
• North British Probability Seminar (Edinburgh)	October 2023
• KTH Probability and Mathematical Physics Seminar	October 2023
• Paris-Saclay Signal Seminar	September 2023
• Columbia Probability Workshop	May 2023
• Ohio State University Combinatorics and Probability Seminar	March 2023
• MIT Integrable Probability Working Group	December 2022
• Northeast Probability Seminar	November 2022
• Cornell Probability Seminar	November 2022
• Probability and Mathematical Physics 2022 (Helsinki) [contributed poster]	June 2022
• Probability and the City Seminar	April 2022
• UChicago Probability and Statistical Physics Seminar	March 2022
• St. Petersburg Youth Conference in Probability and Mathematical Physics	December 2021
• Northeast Probability Seminar	November 2021
• Junior Integrable Probability Seminar	March 2021
• UW-Madison Joint Probability and Number Theory Seminar	February 2021
• Columbia Integrable Probability Seminar	February 2021
• Ohio State University Virtual Combinatorics & Probability seminar	January 2021
• UniMelb-Bielefeld RMT seminar	November 2020
• Joint Mathematics Meetings [contributed talk]	January 2018
• International Conference of the Indian Mathematics Consortium in cooperation with the AMS	December 2016
• Quebec-Maine Number Theory Conference	October 2016

## TEACHING

### Instructor of record - Columbia

- Fall 2024: Math UN2500 (Analysis and Optimization)
- Spring 2025: MATH UN1101 (Calculus I) [2 sections]

### Graduate teaching assistant - MIT

- Fall 2020: 18.600 (Probability Theory)
- Spring 2021: 18.03 (Differential Equations)

### Undergraduate course assistant - Princeton University

- Fall 2015: MAT 216 (Accelerated Honors Analysis I)
- Spring 2016: MAT 218 (Accelerated Honors Analysis II)
- Fall 2016: MAT 340 (Applied Algebra I)
- Spring 2017: MAT 355 (Introduction to Differential Geometry)
- Fall 2017: MAT 320 (Introduction to Real Analysis)
- Spring 2018: MAT 330 (Complex Analysis with Applications)

## MENTORING

**Co-adviser to Columbia PhD student Jiahe Shen, joint with Ivan Corwin** 2024-present

**Mentor, MIT Grad-Undergrad Math Mentor Initiative (GUMMI)** 2021-2023

**Mentor, MIT directed reading program (DRP)**

Mentors for this program guide MIT undergraduates reading an advanced textbook during the month-long independent activities period (IAP) in January. I advised the following groups:

- Sean Li (Lie algebras), Joshua Kuffour and Katie Miner (statistical physics) January 2022
- Korina Dugalaki and Dhruv Rohatgi (random matrices) January 2021
- Korina Dugalaki (integrable probability) January 2020
- Joshua Amaniampong and Yogeshwar Velingker (Lie groups and quantum mechanics) January 2019

**Mentor, MIT SPUR and UROP** Summer 2020-Spring 2021

Supervised undergraduate Korina Dugalaki in a research project on the 6-vertex model, meeting three times weekly during summer and weekly/biweekly during academic year.

**Program in Mathematics for Young Scientists (PROMYS)**

- **Counselor (July 2015 – August 2015)** Gave three high school students daily feedback on their work in the first-year number theory program, mentored a student research project in combinatorics, and graded for the class Complex Analysis in Number Theory.
- **Head counselor (July 2018 – August 2018)** Along with two other head counselors, oversaw a team of 25 counselors in running most aspects of the ~70-student program (in addition to regular counselor duties as above). Mentored students Aman Aggarwal, Caroline Choi and Nathan Sun in a research project which became <https://arxiv.org/abs/1809.07398>.
- **Research lab coordinator (July 2019 – August 2019)** Helped organize and oversee independent research projects of ~20 returning students.
- **Volunteer application grader (Spring 2023)**

#### **Princeton Splash**

2014 – 2018

- Splash is an educational event in which roughly 300 high school students come to Princeton's campus for a day to take short hour classes in a wide array of topics from Princeton students.
- **Teacher coordinator (2014-2015)** Helped recruit undergraduates to teach classes.
- **Co-director (2015-2016, 2016-2017)** Directed a team of about 10 Princeton undergraduates to organize all aspects of the event and coordinate with Princeton administration and national nonprofit Learning Unlimited.
- **Advisor (2017-2018)** Advised and assisted the new directors in running the event.

#### **Princeton University Math Club**

- **Advising co-chair (2017-2018)** Ran a 'big-small' program 'Mentoring Möbius', which brings together graduate students and undergraduates to talk about math in an informal setting.

#### **SERVICE**

**Co-organizer, One World Probability Seminar** Spring 2025

**Local (co-)organizer, Northeast Probability Seminar** Fall 2024

**Co-organizer, Columbia Probability Seminar** Fall 2024-present

**Co-organizer, KTH Probability and Mathematical Physics Seminar** Spring 2024

**Co-organizer, MIT Integrable Probability Working Group** Fall 2021 – Spring 2023

**Co-organizer, MIT Seminar from a Safe Distance** Spring 2020 – Fall 2021

**Co-organizer, MIT pure math graduate student seminar (PuMaGraSS)** 2019 – 2020

**Referee activities** include reports for Advances in Mathematics, Algebra and Number Theory, Annales de l'Institut Henri Poincaré, Contemporary Mathematics, Discrete Mathematics, Journal of Algebra, Nonlinearity, Probability Theory and Related Fields, Selecta Mathematica, SIGMA.