

Rahul Rajkumar

Employment

Institute of Mathematics, Academia Sinica

Postdoctoral Research Fellow

October 2025 - Present

Mentor: Colin McSwiggen

Education

Ph.D. in Mathematics

2025

University of California, Riverside

Concentrations: Probability Theory, Stochastic Processes, p -adic Analysis

Thesis Title: “Brownian Motion in Non-Archimedean Spaces”

Advisor: David Weisbart

M.S. in Applied Mathematics

2023

University of California, Riverside

B.A. in Mathematics

2020

New York University

Publications

Rajkumar, Rahul. “A Scaling Limit of Random Walks in the Rational Adeles.” <https://arxiv.org/abs/2605.0>

Rajkumar, Rahul, and David Weisbart. “Geometry-induced criticality in p -adic scaling limits of random walks.” <https://arxiv.org/abs/2509.24234>

Pierce, Tyler, **Rahul Rajkumar**, Andrea Stine, David Weisbart, and Adam M. Yassine.

“Brownian Motion in a Vector Space over a Local Field Is a Scaling Limit.” *Expositiones Mathematicae* 42, no. 6 (December 1, 2024): 125607. <https://doi.org/10.1016/j.exmath.2024.125607>.

Rajkumar, Rahul, and David Weisbart. “Components and Exit Times of Brownian Motion in Two or More P -Adic Dimensions.” *Journal of Fourier Analysis and Applications* 29, no. 6 (November 20, 2023): 75. <https://doi.org/10.1007/s00041-023-10053-z>.

Select Presentations

“A One-Parameter Family of Random Walks on the Two-Dimensional p -adic Vector Space”

LA Probability Forum. California Institute of Technology. April 9, 2026.

Purdue Probability Seminar. April 1, 2026.

University at Albany Analysis and Data Science Seminar. March 31, 2026.

“Approximating an Adelic Levy Process by Random Walks” (Poster & Lightning Talk)

Seminar on Stochastic Processes. Union College, Schenectady NY. March 26 - 27, 2026.

“Scaling Limits of Random Walks in a Local Field”

2025 PIMS-CRM Summer School in Probability. University of British Columbia, Vancouver. June 12, 2025.

“An Introduction to Probability Theory via Analysis of Quicksort” (Service Talk)

University of California, Riverside Undergraduate Math Club. May 5, 2025.

“Brownian Motion in $\mathbb{Q}_p^d$ ” (Poster)

Graduate Research Symposium. University of California, Riverside. April 8, 2025.

“On Brownian Motion in $\mathbb{Q}_p^d$ ” (Poster)

Seminar on Stochastic Processes Poster Session. Indiana University, Bloomington. March 21, 2025.

“ p -adic Brownian Motion”

Seminar on Stochastic Processes 2025 Lightning Talk Session. Indiana University, Bloomington. March 20, 2025.

“Elements and Applications of p -adic Analysis”

48th Annual New York State Regional Graduate Mathematics Conference. Syracuse University. April 1, 2023.

“Components and Exit Times of Brownian Motion in Multiple p -Adic Dimensions (Extended)”

AMS Joint Mathematics Meeting Special Session on Advances in Markov Models. Boston, January 7, 2023.

“Components and Exit Times of Brownian Motion in Multiple p -Adic Dimensions”

AMS Joint Mathematics Meeting Contributed Paper Session on Probability Theory and Stochastic Processes. Boston, January 6, 2023.

“Diffusion Experiments in a p -adic Universe” (Invited Lecture)

Virtual Research Seminar on Non-Archimedean Analysis and Mathematical Physics. University of Texas Rio Grande Valley, September 21, 2022.

Conferences and Workshops

LA Probability Forum	April 2026
2026 Seminar on Stochastic Processes	March 2026
2025 PIMS-CRM Summer School in Probability (Supported by MSRI/SLMath)	June 2025
Southern California Probability Symposium	April 2025
2025 Seminar on Stochastic Processes	March 2025
2024 Midwest Probability Colloquium	October 2024
MSRI/SLMath Summer Graduate School on Mathematical Spin Glass Theory	August 2024
Southern California Probability Symposium 2024	April 2024
2024 Seminar on Stochastic Processes	March 2024
2024 AMS Joint Mathematics Meeting	January 2024
2023 Southeastern Probability Conference I	May 2023
48th New York State Regional Graduate Mathematics Conference	April 2023
2023 Seminar on Stochastic Processes	March 2023
2023 AMS Joint Mathematics Meeting	January 2023

Awards and Honors

M.M. Rao Award for Probability Theory or Functional Analysis (USD\$10,000)	2023 – 2024
UC Riverside Jones Fellowship (USD\$3,500)	2022 – 2023
UC Riverside Chancellor’s Distinguished Fellowship	2020 – 2025

Service, Outreach, & Miscellany

Taejae University (South Korea) External Reviewer	2025
Subject matter expert reviewer for development of Taejae University’s Spring 2025 Course “Mathematics for Social and Natural Science”	
Undergraduate Research Experience Mentor	Spring 2024

Led an Undergraduate Research Experience (Math 197) on the topic of Brownian motion on manifolds and Varadhan's Formula in the context of Varadhan's 1967 paper "On the Behavior of the Fundamental Solution of the Heat Equation with Variable Coefficients"

UC Riverside AMS Student Chapter Treasurer 2023 – 2025

UC Riverside Pacific Math Alliance Graduate Mentor 2022 – 2023

CLL-New Math Gateway Supplementary Instruction Developer Summer 2022

Citizenship: USA

Musical Instruments: Saxophone, Bassoon, Clarinet

Teaching Experience

Instructor (UC Riverside)

Math 9B	First-Year Calculus	Summer 2024
Math 5A	The Principles of Calculus I	Fall 2022

Teaching Assistant (UC Riverside)

Math 31	Applied Linear Algebra	Winter 2025
Math 149B	Probability and Mathematical Statistics - Part II	Winter 2025
Math 5A	The Principles of Calculus I	Fall 2024
Math 5C	The Principles of Calculus III	Spring 2024
Math 7A	Calculus for Life Sciences	Spring 2024
Math 6B	Precalculus II	Winter 2024
Math 6A	Precalculus I	Winter 2024
Math 5A	The Principles of Calculus I	Fall 2023
Math 7A	Calculus for Life Sciences	Spring 2023
Math 45/EE 20A	Introduction to Ordinary Differential Equations	Spring 2023
Math 9A	First-Year Calculus	Winter 2023
Math 46	Introduction to Ordinary Differential Equations	Winter 2023
Math 149B	Probability and Mathematical Statistics	Winter 2023
Math 11	Introduction to Discrete Mathematics	Summer 2022
Math 149A	Probability and Mathematical Statistics	Summer 2022
Math 9A	First-Year Calculus	Spring 2022
Math 46	Introduction to Ordinary Differential Equations	Spring 2022
Math 153	History of Mathematics	Spring 2022
Math 11	Introduction to Discrete Mathematics	Winter 2022
Math 31	Applied Linear Algebra	Fall 2021
Math 132	Linear Algebra II	Spring 2021
Math 149B	Probability and Mathematical Statistics	Spring 2021
Math 121	Game Theory	Winter 2021
Math 6A	Introduction to College Mathematics for the Sciences	Winter 2021
Math 5	Precalculus	Fall 2020
Math 151A	Advanced Calculus (Real Analysis)	Fall 2020