

Sayan Das

Department of Mathematics, University of Chicago
Room E-416
5734 S. University Avenue, Chicago IL 60637, USA
✉ sayan.das@columbia.edu
📁 [sayan-pq.github.io](https://github.com/sayan-pq)

Employment

Sep 2023– **L.E. Dickson Instructor**, *Department of Mathematics*, University of Chicago, Illinois.

Education

2018–2023 **Ph.D. in Mathematics**, *Columbia University, New York*.

-Advisor: [Ivan Corwin](#).

2016–2018 **Master of Statistics (M.Stat)**, *Indian Statistical Institute, Kolkata*.

2013-2016 **Bachelor of Statistics (B.Stat (Hons.))**, *Indian Statistical Institute, Kolkata*.

Research Interests

Directed Polymers, Large Deviations, Integrable Probability, Stochastic Partial Differential Equations, Permutations.

Publications and Preprints

18. **KPZ equation limit of random walks in random environments**, *Sayan Das, Hindy Drillick, and Shalin Parekh*, Submitted, [[arXiv](#)].
17. **The half-space log-gamma polymer in the bound phase**, *Sayan Das and Weitao Zhu*, Submitted, [[arXiv](#)].
16. **KPZ exponents for the half-space log-gamma polymer**, *Guillaume Barraquand, Ivan Corwin, and Sayan Das*, Submitted, [[arXiv](#)].
15. **Large deviations for the q -deformed polynuclear growth**, *Sayan Das, Yuchen Liao, and Matteo Mucciconi*, Submitted, [[arXiv](#)].
14. **KPZ equation limit of sticky Brownian motion**, *Sayan Das, Hindy Drillick, and Shalin Parekh*, Submitted, [[arXiv](#)].
13. **Long and short time laws of iterated logarithms for the KPZ fixed point**, *Sayan Das, Promit Ghosal, and Yier Lin*, Submitted, [[arXiv](#)].
12. **Localization of the continuum directed random polymer**, *Sayan Das and Weitao Zhu*, Submitted, [[arXiv](#)].
11. **Asymptotic distribution of random quadratic forms**, *Bhaswar B. Bhattacharya, Sayan Das, Somabha Mukherjee, and Sumit Mukherjee*, Submitted, [[arXiv](#)].
10. **Temporal increments of the KPZ equation with general initial data**, *Sayan Das*, Submitted, [[arXiv](#)].
9. **Large deviation principle for random permutations**, *Jacopo Borga, Sayan Das, Sumit Mukherjee, and Peter Winkler*, To appear in *International Mathematics Research Notices*, [[arXiv](#)].
8. **A fourth moment phenomenon for asymptotic normality of monochromatic subgraphs**, *Sayan Das, Zoe Himwich and Nitya Mani*, To appear in *Random Structures & Algorithms*, [[arXiv](#)].
7. **Short- and long-time path tightness of the continuum directed random polymer**, *Sayan Das and Weitao Zhu*, To appear in *Ann. Inst. H. Poincaré Probab. Statist.*, [[arXiv](#)].
6. **Law of iterated logarithms and fractal properties of the KPZ equation**, *Sayan Das and Promit Ghosal*, *Ann. Probab.* 51(3): 930-986 (May 2023), [[arXiv](#)][[Journal](#)].
5. **Large Deviations for Discrete β -ensembles**, *Sayan Das and Evgeni Dimitrov*, *Journal of Functional Analysis* Vol 283, Issue 1, [[arXiv](#)][[Journal](#)].
4. **Motif estimation in large graphs: The fourth moment phenomenon**, *Bhaswar B. Bhattacharya, Sayan Das, and Sumit Mukherjee*, *Ann. Statist.* 50(2): 987-1011, [[arXiv](#)][[Journal](#)].

3. **Upper-tail Large Deviation Principle for ASEP**, *Sayan Das and Weitao Zhu*, *Electron. J. Probab.* 27: 1-34 (2022), [arXiv][Journal].
2. **Fractional moments of the Stochastic Heat Equation**, *Sayan Das and Li-Cheng Tsai*, *Ann. Inst. H. Poincaré Probab. Statist.* 57 (2) 778-799, May 2021, [arXiv][Journal].
1. **Extremal process of the zero-average Gaussian free field for $d \geq 3$** , *Sayan Das, and Rajat Subhra Hazra*, *Statistics & Probability Letters*, 146, pp.42-49, [arXiv][Journal].

Invited Talks

- Han 2024 **Northwestern University Probability Seminar.**
- Jan 2024 **Joint Mathematics Meetings, Special Session on Large Random Permutations**, San Francisco.
- Nov 2023 **University of Michigan.**
- Oct 2023 **University of Illinois.**
- Aug 2023 **National University of Singapore Probability Seminar.**
- Aug 2023 **Random Matrix days, Indian Statistical Institute.**
- Apr 2023 **University of Chicago Probability Seminar.**
- Jan 2023 **University of North Carolina Probability Seminar.**
- Dec 2022 **UC Berkeley Probability Seminar.**
- Dec 2022 **Stanford Probability Seminar.**
- Nov 2022 **MIT Probability Seminar.**
- Nov 2022 **University of Chicago Probability Seminar.**
- Oct 2022 **KTH Random Matrix Theory Seminar, Online.**
- Oct 2022 **Cornell University Probability Seminar.**
- Sep 2022 **University of Toronto Probability Seminar.**
- May 2022 **Probability and the City Seminar, Online.**
- Mar 2022 **UC Berkeley Probability Seminar, Online.**
- Mar 2022 **University of Wisconsin-Madison Probability Seminar.**
- Mar 2022 **University of Utah Stochastic Seminar.**
- Mar 2022 **Columbia Integrable Probability Seminar, Online.**
- May 2021 **Columbia Princeton Probability Day 2021 (Short Talk), Online.**
- Feb 2021 **Columbia Integrable Probability Seminar, Online.**

Contributed Talks

- Sep 2022 **Graduate Student Probability Conference, University of Wisconsin-Madison.**
- Jun 2022 **Summer School in Probability, University of British Columbia, Vancouver.**
- Oct 2021 **Program Associates Short Talk, MSRI, Berkeley.**
- Nov 2020 **North East Probability Seminar 2020, Online.**
- Aug 2020 **Bernoulli-IMS One World Symposium 2020, Online.**

Teaching and Teaching Assistantships

Instructor .

- Winter 2024 **Mathematical Methods in the Physical Sciences I (2 sections)**, *University of Chicago.*
- Fall 2023 **Mathematical Methods in the Physical Sciences II (2 sections)**, *University of Chicago.*
- Spring 2021 **Calculus I**, *Columbia University.*
- Summer 2020 **Calculus III**, *Columbia University.*

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- Fall 2022 **Intro to Honors Mathematics**, *Columbia University.*
- Spring 2022 **Undergraduate Probability**, *Columbia University.*
- Fall 2020 **Calculus II**, *Columbia University.*
- Spring 2020 **Honors Math II**, *Columbia University.*
- Fall 2019 **Analysis and Probability I**, *Columbia University.*

Mentorship

- Winter 2024 **Mentor in 'Association for Women in Mathematics (AWM) Mentor Network'**.
-Student: Ashna Jain (UMass Amherst)
- Fall 2020 **Mentor in 'Twoples', A Directed Reading Program for Math Undergraduates**.
-Student: Duncan Haystead (UC Berkeley)
-Project Title: The Moment Problem
- Fall 2020 **Mentor in Columbia Directed Reading Program**.
-Student: Adiba Ejaz (Columbia)
-Project Title: Cover Time of a graph

Services

Organizer

- 2023- **Co-organizer of UChicago Probability and Mathematical Physics Seminar**.
2020-21 **Co-organizer of Junior Integrable Probability Seminar**.
2020 **Organizer of Student Probability Seminar at Columbia, Spring 2020 - Fall 2020**.

Refereeing

- Annals of Probability**.
Electronic Journal of Probability.
Communications in Mathematical Physics.
Annals of Applied Probability.
Duke Mathematical Journal.
Journal of Statistical Physics.

Schools and Conferences Attended

- Mar 2024 **KPZ meets KPZ Workshop**, *The Fields Institute*, Toronto.
- Jan 2024 **Joint Mathematics Meetings**, *San Francisco*.
- Jul 2022 **First-passage percolation and related models conference**, *Tata Institute of Fundamental Research*, Bangalore.
- Jun 2022 **Summer School in Probability**, *University of British Columbia*, Vancouver.
- Aug-Dec 2021 **Universality and Integrability in Random Matrix Theory and Interacting Particle Systems**, *MSRI*, Berkeley, CA.
- Jul 2019 **Random Matrix Summer School**, *University of California, Los Angeles*, Los Angeles, CA.
- Jun 2019 **11th Cornell Probability Summer School**, *Cornell University*, Ithaca, NY.
- May-Jun 2019 **Virginia Integrable Probability Summer School**, *University of Virginia*, Charlottesville, VA.
- Mar 2019 **AMS Spring Sectional Meeting**, *University of Hawai'i at Manoa*, Honolulu, HI.
- Dec 2018 **Advances in Asymptotic Probability (in honor of Amir Dembo's 60th birthday)**, *Stanford University*, Stanford, CA.

Awards and Honours

- 2021-22 **Peter and Catherine Klein Fellowship**, *for academic qualifications and contributions*, Columbia University, New York.
- 2021 **Stephen Della Pietra Program Associate Fellowship**, MSRI, Berkeley.
- 2021 **Winner of Student Paper Competition**, *Statistical theory and methodology section*, International Indian Statistical Association Conference, 2021.
- 2020-21 **Peter and Catherine Klein Fellowship**, *for academic qualifications and contributions*, Columbia University, New York.
- 2019-20 **Carl B. Boyer Memorial Fellowship**, *for academic qualifications and contributions*, Columbia University, New York.
- 2018 **PCM Memorial Award**, *for academic performance in M.Stat Programme*, Indian Statistical Institute, Kolkata.

2017 **D.Basu Memorial Award**, *for academic performance in B.Stat Programme*, Indian Statistical Institute, Kolkata.

2013-2018 **INSPIRE Scholarship**, *Department of Science and Technology*, Govt. of India.

Technical skills

C, C++, Matlab, L^AT_EX, R, Mathematica, Geogebra

References

Ivan Corwin

Professor,
Department of Mathematics,
Columbia University.
ic2354@columbia.edu

Davar Khoshnevisan

Professor,
Departments of Mathematics,
The University of Utah.
davar@math.utah.edu

Alan Hammond

Professor,
Departments of Mathematics and Statistics,
University of California, Berkeley.
alanmh@berkeley.edu

Li-Cheng Tsai

Assistant Professor,
Departments of Mathematics,
The University of Utah.
licheng.tsai@utah.edu

Shirshendu Ganguly

Associate Professor,
Department of Statistics,
University of California, Berkeley.
sganguly@berkeley.edu