

Sayan Das

Employment

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

Education

2018–2023 **Ph.D. Candidate**, *Department of Mathematics*, Columbia University, New York.

–Advisor: Professor [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, Graph Coloring.

Publications

14. **Large deviation principle for random permutations**, *Jacopo Borga, Sayan Das, Sumit Mukherjee, and Peter Winkler*, To appear in *International Mathematics Research Notices*, [[arXiv](#)].
13. **A fourth moment phenomenon for asymptotic normality of monochromatic subgraphs**, *Sayan Das, Zoe Himwich and Nitya Mani*, To appear in *Random Structures & Algorithms*, [[arXiv](#)].
12. **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](#)].
11. **Law of iterated logarithms and fractal properties of the KPZ equation**, *Sayan Das and Promit Ghosal*, To appear in *Annals of Probability*, [[arXiv](#)].
10. **Large Deviations for Discrete β -ensembles**, *Sayan Das and Evgeni Dimitrov*, *Journal of Functional Analysis* Vol 283, Issue 1, [[arXiv](#)][[Journal](#)].
9. **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](#)].
8. **Upper-tail Large Deviation Principle for ASEP**, *Sayan Das and Weitao Zhu*, *Electron. J. Probab.* 27: 1-34 (2022), [[arXiv](#)][[Journal](#)].
7. **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](#)].
6. **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](#)].

Preprints

5. **KPZ equation limit of sticky Brownian motion flows**, *Sayan Das, Hindy Drillick, and Shalin Parekh*, Submitted, [[arXiv](#)].
4. **Long and short time laws of iterated logarithms for the KPZ fixed point**, *Sayan Das, Promit Ghosal, and Yier Lin*, Submitted, [[arXiv](#)].
3. **Localization of the continuum directed random polymer**, *Sayan Das and Weitao Zhu*, Submitted, [[arXiv](#)].
2. **Asymptotic distribution of random quadratic forms**, *Bhaswar B. Bhattacharya, Sayan Das, Somabha Mukherjee, and Sumit Mukherjee*, Submitted, [[arXiv](#)].
1. **Temporal Increments of the KPZ equation with general initial data**, *Sayan Das*, Submitted, [[arXiv](#)].

Invited Talks

- Aug 2023 **National University of Singapore Probability Seminar.**
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

- 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

- 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

- 2020-21 **Co-organizer of *Junior Integrable Probability Seminar*.**
2020 **Organizer of *Student Probability Seminar* at Columbia, *Spring 2020 - Fall 2020*.**

Refereeing

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

Schools and Conferences Attended

- 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, \LaTeX , R, Mathematica, Geogebra