

## Curriculum Vitae

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### CONTACT INFORMATION

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**Date of birth:** 28 April, 1992  
**Citizenship:** Indian.

### RESEARCH INTERESTS

My research interests are in probability theory. I am particularly interested in *the random growth models that belong to the KPZ universality class, geometric properties of the KPZ fixed point and the relevant processes, last passage percolation, exclusion processes, competitive erosion, stable random fields, percolation theory, Coulomb gas and random walks on graphs.*

### EMPLOYMENT

I am currently a University Lecturer in Probability (Assistant Professor) at the Department of Pure Mathematics and Mathematical Statistics (DPMMS), University of Cambridge from July 2021. I am also a Fellow of Trinity Hall.  
Prior to this, I was a Postdoctoral Fellow at the Department of Mathematics, University of Toronto from July 2019 to June 2021.

### EDUCATION

- I. **Ph.D. in Statistics**, Department of Statistics, University of California, Berkeley. **2015-2019**.  
Thesis: Last passage percolation and the Slow bond problem.  
Advisor: Dr. Alan Hammond.
- II. **Master of Statistics (M. Stat.)**, *Indian Statistical Institute, Kolkata*, **2013-2015**.
  1. Total Percentage Score: 95.1% (*First Division with Distinction, class topper*).
  2. Specialization: Mathematical Statistics and Probability.
- III. **Bachelor of Statistics (B. Stat.) (Hons.)**, *Indian Statistical Institute, Kolkata*, **2010-2013**.
  1. Total Percentage Score: 93.1% (*First Division with Distinction, class topper*)

### ACADEMIC ACHIEVEMENTS, AWARDS AND HONOURS

- **The Outstanding Graduate Student Instructor Award** for excellence in teaching by a graduate student at University of California, Berkeley, in 2019.
- **The Michel and Line Loève Fellowship**, Department of Statistics, University of California, Berkeley, 2015-17.
- **ISIAA-Mrs. M.R. Iyer Memorial Gold Medal**, for outstanding performance in M.Stat., January 2016.
- **Debesh-Kamal Scholarship for Higher Studies Abroad**, Ramakrishna Mission Institute of Culture, India, 2015.
- **ISIAA-Mrs. M.R. Iyer Memorial Gold Medal**, for outstanding performance in B.Stat. (Hons.) undertaken during 2010-2013, January 2014, awarded by the Hon'ble President of India.
- **D. Basu Memorial Gold Medal** for outstanding presentation as well as best performance in B.Stat. (Hons.) Programme 2010-2013, January 2014, awarded by the Hon'ble President of India.
- **Nikhilesh Bhattacharya Memorial Gold Medal** for the best performance in Statistics in B.Stat. (Hons.) Programme 2010-2013, January 2014, awarded by the Hon'ble President of India.
- Awarded the **Kishore Vaigyanik Protsahan Yojana (KVPY) Fellowship** by the Department of Science and Technology (DST), Government of India, 2009-15.

- Successful in **Indian National Mathematical Olympiad (INMO)**, 2008 and attended the **International Mathematical Olympiad Training Camp (IMOTC)** conducted by the National Board for Higher Mathematics (NBHM) in 2008 and 2009.

PREPRINTS AND  
PUBLICATIONS

1. **Three-halves variation of geodesics in the directed landscape.**-with Duncan Dauvergne and Bálint Virág. Available at <https://arxiv.org/abs/2010.12994>. Submitted to *Annals of Probability*.
2. **Convergence of exclusion processes and KPZ equation to the KPZ fixed point.**-with Jeremy Quastel. Available at <https://arxiv.org/pdf/2008.06584>. Submitted to *Journal of the American Mathematical Society*.
3. **Brownian absolute continuity of the KPZ fixed point with arbitrary initial condition.**-with Bálint Virág. *Annals of Probability*, to appear. Available at <https://arxiv.org/pdf/2002.08496>.
4. **Ground states and hyperuniformity of the hierarchical Coulomb gas in all dimensions.**-with Shirshendu Ganguly. *Probab. Theory Related Fields*, 177(3-4):621-675, 2020. Also available at <https://arxiv.org/abs/1904.05321>.
5. **Stability of collision property of a graph.**-with Omer Angel and Yuval Peres. (Draft available on request).
6. **A note on the local weak limit of a sequence of expander graphs.** Available at <https://arxiv.org/abs/1808.09073>. Submitted to *Electronic Communications in Probability*.
7. **Modulus of continuity for fluctuations and weight profiles in Poissonian last passage percolation.**-with Alan Hammond. *Electron. J. Probab.*, 25:Paper No. 29, 38, 2020. Also available at <https://arxiv.org/abs/1804.07843>.
8. **Last Passage Percolation and the Slow Bond Problem.** ProQuest LLC, Ann Arbor, MI, 2019. Thesis (Ph.D.)-University of California, Berkeley. Also available at <https://www.math.toronto.edu/ssarkar/thesis.pdf>.
9. **Formation of large-scale random structure by competitive erosion.**  
- with Shirshendu Ganguly and Lionel Levine. *Annals of Probability*, 47(6):3649-3704, 2019. Also available at <https://arxiv.org/abs/1711.11028>.
10. **Invariant measures for TASEP with a slow bond.**  
- with Riddhipratim Basu and Allan Sly. Available at <https://arxiv.org/abs/1704.07799>.
11. **Coalescence of geodesics in exactly solvable models of last passage percolation.**  
- with Riddhipratim Basu and Allan Sly. *J. Math. Phys.*, 60(9): 093301, 22, 2019. Also available at <https://arxiv.org/abs/1704.05219>.
12. **A relative anti-concentration inequality.**  
- with Manjunath Krishnapur. Available at <https://arxiv.org/abs/1612.09045>.
13. **Stable random fields indexed by finitely generated free groups.**  
-with Parthanil Roy. *Annals of Probability*, 2018, Vol. 46, No. 5, 2680-2714. Also available at <https://arxiv.org/abs/1608.03887>.

INVITED TALKS

- **Stanford Applied Math and Probability Seminar**, Stanford University, March, 2021.
- **University of Victoria Math Seminar**, University of Victoria, March, 2021.
- **Chicago Probability Seminar**, University of Chicago, February, 2021.
- **Warwick Probability Seminar**, University of Warwick, February, 2021.

- **North British Probability Seminar**, University of Edinburgh, November, 2020.
- **Bernoulli-IMS One World Symposium** August, 2020.
- **Integrable probability mini-workshop**, Online Open Probability School, June 2020.
- **UCLA Probability Seminar**, University of California Los Angeles, April 2019.
- **UToronto Probability Seminar**, University of Toronto, February 2019.
- **UC Davis Probability Seminar**, University of California Davis, November 2018.
- **Columbia Probability Seminar**, Columbia University, June 2018.
- **Cornell Probability Seminar**, Cornell University, March 2018.
- **UC Berkeley Probability Seminar**, University of California Berkeley, March 2018.
- **Stanford Probability Seminar**, Stanford University, February 2018.
- **Indo-Russian Meeting in Probability and Statistics**, Bangalore, India, January 2018.
- **PIMS Summer School 2017**, University of British Columbia, June 2017.
- **Bangalore Probability Seminar**, IISc, Bangalore, India, January 2017.
- **Probability Seminar**, ISI Kolkata, India, December 2016.
- **Bangalore Probability Seminar**, IISc, Bangalore, India, July 2015.
- **Prasanta Chandra Mahalanobis Memorial Lecture**, ISI Kolkata, India, July 2015.
- **D.Basu Memorial Lecture**, ISI Kolkata, India, December 2013.

#### RESEARCH VISITS

- **Microsoft Research, Redmond**, November 2018, **Columbia University** June 2018, visited Dr. Ivan Corwin, **Princeton University** March 2018, visited Dr. Allan Sly, **Microsoft Research, Redmond**, October 2017, **Princeton University** September 2017, visited Dr. Allan Sly.

#### TEACHING EXPERIENCE

At University of Toronto, I have taught the following courses.

- MAT 137 Calculus, Fall-Winter 2020-2021 (course instructor), Summer 2020 (course instructor and coordinator), Fall-Winter 2019-2020 (course instructor).

At UC Berkeley, I have been a Graduate Student Instructor for the following courses. I received the **Outstanding Graduate Student Instructor Award** in 2019.

- Graduate Student Instructors for Stat 88, Spring 2019 (Probability and Mathematical Statistics in Data Science), Stat 205A/C218A, Fall 2018 (first half of a graduate course in probability), Stat 205B, Spring 2018 (second half of a graduate course in probability), Stat 134, Fall 2016 (undergraduate course in probability), Stat 134, Summer 2016 (undergraduate course in probability), Stat 150, Fall 2015 (upper division course in Stochastic processes).

#### OTHER SKILLS

- Software packages: Matlab, R, Latex.
- Programming languages: C.

PROFESSIONAL  
ACTIVITIES

Co-organizer of the Probability seminar at Toronto, reviewer for *zbMATH* and *AMS Mathematical Reviews*, reviewer for journals *Probability Theory and Related Fields* and *Annals of Probability*.

REFERENCES

Available on request.