

# Curriculum Vitae

## Antar Bandyopadhyay

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### Personal Data

1. **Name:** Antar Bandyopadhyay.
2. **Designation:** Professor.
3. **Division and Unit:** Theoretical Statistics and Mathematics Division, Theoretical Statistics and Mathematics Units in Delhi and Kolkata.
4. **Date and Place of Birth:** September 9, 1974 in Calcutta, India.
5. **Details of Educational Qualification:**
  - **Doctorate:** Ph.D. in Statistics from the **University of California, Berkeley, USA**  
**Date of Confirmation:** May 24, 2003  
**Dissertation Title:** Max-type Recursive Distributional Equations.  
**Advisor:** Professor David J. Aldous.
  - **Master of Arts:** M.A. in Statistics from the **University of California, Berkeley, USA:** May 2000.
  - **Master of Statistics:** M.Stat. from the **Indian Statistical Institute, Calcutta, India:** May 1998. Specialization: Mathematical Statistics and Probability.
  - **Bachelor of Statistics:** B.Stat. with Honors from the **Indian Statistical Institute, Calcutta, India:** May 1996.
6. **Details of Employment:**
  - **Professor:** Working as a permanent faculty in the capacity of a professor at the **Theoretical Statistics and Mathematics Division** at the **Indian Statistical Institute** jointly with two of its centres at **New Delhi** and **Calcutta, India:** January 01, 2020 - present.
  - **Associate Professor:** Working as a permanent faculty in the capacity of an associate professor at the **Theoretical Statistics and Mathematics Division** at the **Indian Statistical Institute** jointly with two of its centres at **New Delhi** and **Calcutta, India:** June 1, 2012 - December 31, 2019.
  - **Assistant Professor:** Worked as a permanent faculty in the capacity of an assistant professor at the **Theoretical Statistics and Mathematics Division** at the **Indian Statistical Institute** jointly with two of its centres at **New Delhi** and **Calcutta, India:** August 31, 2006 - May 31, 2012.
  - **Postdoctoral Fellow:** Worked as a postdoctoral fellow at the **Department of Mathematics and Mathematical Statistics** at the **Chalmers University of Technology, Göteborg, Sweden:** September 2004 - August 2006.

- **Postdoctoral Fellow:** Worked as a postdoctoral member at the **Institute for Mathematics and Its Applications, University of Minnesota, Minneapolis, USA:** September 2003 - August 2004.
- **Visiting Scientist:** Worked as a visiting research scientist at the **Indian Statistical Institute, Calcutta, India:** June 2003 - August 2003.

## Research Interests

Theoretical and applied probability, in particular random graphs; probability on trees. Combinatorial optimization and mean-field statistical physics problems; recursive distributional equations, and recursive tree processes; branching random walks; percolation theory, interacting particle systems; Markov chains and their mixing behavior; random walks in random environment; urn models. Also interested in theoretical statistics, modeling and inference.

## Publications and Preprints

- **Research Articles:**

**Published/Accepted:**

1. Right-Most Position of a Last Progeny Modified Time Inhomogeneous Branching Random Walk. *Statist. Probab. Lett.*, 193: 109697, 2022. [with Partha Pratim Ghosh].
2. S.L.L.N. and C.L.T. for Random Walks in I.I.D. Random Environment on Cayley Tree. *Stoc. Proc. Appl.*, 146: 80 - 97, 2022. [with Siva Athreya, Amites Dasgupta and Neeraja Sahasrabudhe]
3. A New Approach to Pólya Urn Schemes and Its Infinite Color Generalizations. *Ann. Appl. Probab.*, 32(1): 46 - 79, 2022. [with Debleena Thacker].
4. Strong convergence of infinite color balanced urns under uniform ergodicity. *J. Appl. Probab.*, 57(3): 853 - 865, 2020. [with Svante Janson and Debleena Thacker]
5. Linear de-preferential urn models. *Adv. Appl. Probab.*, 50(4): 1176 - 1192, 2018. [with Gursharn Kaur]
6. Pólya Urn Schemes with Infinitely Many Colors. *Bernoulli*, 23(4B): 3243 - 3267, 2017. [with Debleena Thacker].
7. On the Expected Total Number of Infections for a Virus Spread on Finite Networks. *Ann. Appl. Probab.*, 25(2): 663 - 674, 2015. [with Farkhondeh Sajadi].
8. On Standard Deviation Estimates for Tree Order Restricted Models. *Statistics*, 48(5): 1122 - 1137, 2014. [with Sanjay Chaudhuri].
9. Rate of Convergence and Large Deviations for Infinite Color Pólya Urn Schemes. *Statist. Probab. Lett.*, 92: 232 - 240, 2014. [with Debleena Thacker].
10. Random Walks in I.I.D. Random Environment on Non-Abelian Free Groups. *Statist. Probab. Lett.*, 92: 39 - 44, 2014. [with Siva Athreya and Amites Dasgupta].
11. On the Nearest-Neighbor Algorithm for the Mean Field Traveling Salesman Problem. *J. Appl. Probab.*, 51: 1 - 12, 2014. [with Farkhondeh Sajadi].
12. Connectivity Threshold of Random Geometric Graphs with Cantor Distributed Vertices. *Statist. Probab. Lett.*, 82: 2103 - 2107, 2012. [with Farkhondeh Sajadi].
13. Endogeneity for the Logistic Recursive Distributional Equation. *Z. Anal. Anwend.*, 30(2): 237 - 251, 2011.

14. On the One Dimensional “Learning from Neighbours” Model. *Elec. J. Probab.*, 15: 1574 - 1593, 2010. [with Rahul Roy and Anish Sarkar].
15. On the Cluster Size Distribution for Percolation on Some General Graphs. *Revista Matemática Iberoamericana*, 26(2): 529 - 550, 2010. [with Jeffrey Steif and Ádám Timár].
16. Counting Without Sampling: Asymptotics of the Log-Partition Function for Certain Statistical Physics Models. *Random Structures and Algorithms*, 33(4): 452 - 479, 2008. [with David Gamarnik].
17. Random Walk in Dynamic Markovian Random Environment. *Latin American Journal of Probability and Mathematical Statistics*, 1: 205 - 224, 2006. [with Ofer Zeitouni].
18. A Necessary and Sufficient Condition for the Tail-Triviality of a Recursive Tree Process. *Sankhyā*, 68(1): 1 - 23, 2006.
19. Counting without Sampling. New Algorithms for Enumeration Problems Using Statistical Physics. *Proceedings of the Seventeenth Annual ACM-SIAM Symposium on Discrete Algorithms*, 17: 890 - 899, 2006. [with David Gamarnik].
20. A Survey of Max-type Recursive Distributional Equations. *Ann. Appl. Probab.*, 15(2): 1047 - 1110, 2005. [with David J. Aldous].
21. How to Combine Fast Heuristic Markov Chain Monte Carlo with Slow Exact Sampling. *Electron. Comm. Probab.*, 6: 79 - 89 (electronic), 2001. [with David J. Aldous].

**Submitted:**

22. Right-Most Position of a Last Progeny Modified Branching Random Walk. (preprint: <https://arxiv.org/pdf/2106.02880>), 2022. [with Partha Pratim Ghosh].

**In Preparation:**

23. De-Preferential Attachment Random Graphs. (*work in progress*), 2022. [with Subhabrata Sen].
24. Hard Core Model on Random Graphs. (*work in progress*), 2022.
25. On Generalized Preferential Attachment Random Graph Models. (*work in progress*), 2022. [with Krishna B. Athreya].

**Project Reports:**

26. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2021 TSD, *peer reviewed and will be presented in the RASMAG/27 meeting of the International Civil Aviation Organization*. The analysis was conducted in May 2022 on request from the Airports Authority of India. [with Deepayan Sarkar].
27. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2020 TSD, *peer reviewed and will be presented in the RASMAG/26 meeting of the International Civil Aviation Organization*. The analysis was conducted in May 2021 on request from the Airports Authority of India. [with Deepayan Sarkar].
28. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2019 TSD, *peer reviewed and will be presented in the RASMAG/25 meeting of the International Civil Aviation Organization*. The analysis was conducted in May 2020 on request from the Airports Authority of India. [with Deepayan Sarkar].
29. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2018 TSD, *peer reviewed and will be presented in the RASMAG/24 meeting of the International Civil Aviation Organization*. The analysis was conducted in May 2019 on request from the Airports Authority of India. [with Deepayan Sarkar].

30. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2017 TSD, *peer reviewed and presented in the RASMAG/23 meeting of the International Civil Aviation Organization*. The analysis was conducted in May 2018 on request from the Airports Authority of India. [with Deepayan Sarkar].
31. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2016 TSD, *peer reviewed and presented in the RASMAG/22 meeting of the International Civil Aviation Organization*. The analysis was conducted in April 2017 on request from the Airports Authority of India. [with Deepayan Sarkar].
32. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2015 TSD, *peer reviewed and presented in the RASMAG/21 meeting of the International Civil Aviation Organization*. The analysis was conducted in April 2016 on request from the Airports Authority of India. [with Deepayan Sarkar].
33. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2014 TSD, *peer reviewed and presented in the RASMAG/20 meeting of the International Civil Aviation Organization*. The analysis was conducted in April 2015 on request from the Airports Authority of India. [with Deepayan Sarkar].
34. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2013 TSD, *peer reviewed and presented in the RASMAG/19 meeting of the International Civil Aviation Organization*. The analysis was conducted in May 2014 on request from the Airports Authority of India. [with Deepayan Sarkar].
35. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on December 2012 TSD, *peer reviewed and presented in the RASMAG/18 meeting of the International Civil Aviation Organization*. The analysis was conducted in February 2013 on request from the Airports Authority of India. [with Deepayan Sarkar].
36. Post-RHS Implementation Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region based on June 2012 TSD, *peer reviewed and presented in the RASMAG/17 meeting of the International Civil Aviation Organization*. The analysis was conducted in August 2012 as per the MoA between ISI and Airports Authority of India. [with Deepayan Sarkar, A. P. Udayanarayanan, J. Masivayana and C. Balaji].
37. Lateral and Longitudinal Collision Risk Assessment of the BOBASIO Region (based on December 2011 data), *peer reviewed and presented in the RASMAG/16 meeting of the International Civil Aviation Organization*. The analysis was conducted in January 2012 as per the MoA between ISI and Airports Authority of India. [with Deepayan Sarkar].
38. Lateral and Longitudinal Collision Risk Assessment of Bay of Bengal and Arabian Sea (based on August 2011 data), *peer reviewed and presented in the BOBRHS meeting of the International Civil Aviation Organization*. The analysis was conducted in November 2011 as per the MoA between ISI and Airports Authority of India. [with Deepayan Sarkar].
39. Lateral and Longitudinal Collision Risk Assessment of Bay of Bengal (based on December 2010 data), *peer reviewed and presented in the RASMAG/15 meeting of the International Civil Aviation Organization*. The analysis was conducted in July 2011 as per the MoA between ISI and Airports Authority of India. [with Deepayan Sarkar].
40. Lateral and Longitudinal Collision Risk Assessment of Bay of Bengal (based on December 2010 only Chennai FIR data), *presented in the RASMAG/14 meeting of the International Civil Aviation Organization*. The analysis was conducted in February 2011 as per the MoA between ISI and Airports Authority of India. [with Deepayan Sarkar].

• **Other Articles:**

41. Challenges in Airspace Safety Assessment. *Bulletin of CNS Officer's Guild*, published by Airports Authority of India, 27 - 30, 2014.

42. International Congress of Mathematicians 2010, Hyderabad. *Bulletin of Institute of Mathematical Statistics*, 40(2): 10 - 11, 2011.
43. Mathematics: The Universal Language of Science. GSI Center, Graduate Division, University of California, Berkeley, 2003.

### Doctoral Students

1. **Name:** Mr. Deborshi Das, Indian Statistical Institute, New Delhi, India.  
**Duration:** 2021 – present.  
**Dissertation Title:** *Interacting Pólya Urns on Infinite Graphs*.  
**Subject Area:** Statistics (Probability).  
**Note:** Started from December 2021.
2. **Name:** Mr. Partha Pratim Ghosh, Indian Statistical Institute, New Delhi, India.  
**Duration:** 2017 – 2022.  
**Dissertation Title:** *A Last Progeny Modified Branching Random Walk*.  
**Subject Area:** Statistics (Probability).  
**Note:** Graduated on May 31, 2022.
3. **Name:** Ms. Gursharn Kaur, Indian Statistical Institute, New Delhi, India.  
**Duration:** 2013 – 2018.  
**Dissertation Title:** *Negatively Reinforced Balanced Urn Models*.  
**Subject Area:** Statistics (Probability).  
**Note:** Graduated on November 20, 2018.
4. **Name:** Ms. Debleena Thakare, Indian Statistical Institute, New Delhi, India.  
**Duration:** 2009 – 2015.  
**Dissertation Title:** *On Pólya Urn Schemes with Infinitely Many Colors*.  
**Subject Area:** Mathematics (Probability).  
**Note:** Graduated on July 3, 2015.
5. **Name:** Ms. Farkhondeh A. Sajadi, Indian Statistical Institute, New Delhi, India.  
**Duration:** 2007 – 2013.  
**Dissertation Title:** *Three Stochastic Models On Discrete Structures*.  
**Subject Area:** Statistics (Probability).  
**Note:** Graduated on July 3, 2013.

### Master Dissertation and Project Supervision

1. **Name:** Mr. Somak Laha, M.Stat. IInd Year, Indian Statistical Institute, Kolkata, India.  
**Duration:** September 2021 - May 2022.  
**Dissertation Title:** De-preferential attachment model through preferential attachment.  
**Note:** Dissertation work as part of the Applied Statistics specialization of M.Stat.
2. **Name:** Mr. Sachin Sachdeva, M.Sc. IInd Year, Central University of Rajasthan, India.  
**Duration:** January - June, 2020.  
**Project Title:** Simulation Study of some Moderately Preferential Random Graph Models.  
**Note:** As part of the one semester long dissertation research.
3. **Name:** Ms. Pragya Sur, M.Stat. Ist Year, Indian Statistical Institute, Kolkata, India.  
**Duration:** May - June, 2013.  
**Project Title:** Connectivity Threshold of Random Geometric Graphs on Sierpinski Gasket.  
**Note:** As part of the KVPY Summer Research Fellowship.

4. **Name:** Mr. Subhabrata Sen, M.Stat. IIInd Year, Indian Statistical Institute, Kolkata, India.  
**Duration:** June 2012 - May 2013.  
**Dissertation Title:** De-preferential Attachment Random Graph Models.  
**Note:** Dissertation work as part of the Mathematical Statistics and Probability specialization of M.Stat.
5. **Name:** Mr. Sourabh Banerjee, B.Stat. IIIrd Year, Indian Statistical Institute, Kolkata, India.  
**Duration:** May - June, 2011.  
**Project Title:** Characterizations of the Normal Distribution.  
**Note:** As part of the KVPY Summer Research Fellowship.
6. **Name:** Mr. Aritra Guha, B.Stat. IIIrd Year, Indian Statistical Institute, Kolkata, India.  
**Duration:** May - June, 2011.  
**Project Title:** Some Characterizations of the Cauchy Distribution.  
**Note:** As part of the KVPY Summer Research Fellowship.
7. **Name:** Mr. Avishek Guha, M.Stat. (Application) II Year, Indian Statistical Institute, Delhi, India.  
**Duration:** January - May, 2009.  
**Project Title:** Simulation Study of the Convergence and Consistency of the Newton-type Algorithm for Estimating Mixing Distribution.  
**Note:** Project work as part of the Application specialization of M.Stat.
8. **Name:** Mr. Sayan Dasgupta, M.Stat. (Application) II Year, Indian Statistical Institute, Delhi, India.  
**Duration:** January - May, 2009.  
**Project Title:** On Simulation Study of the Convergence and Consistency of the Newton-type Algorithms for Estimating Mixing Distribution.  
**Note:** Project work as part of the Application specialization of M.Stat.

### Editorial Work

1. Associate Editor, *Journal of Statistical Planning and Inference (JSPI)*, published by *Elsevier*: January 2012 - present.
2. Associate Editor, *Calcutta Statistical Association Bulletin*, published by *Calcutta Statistical Association*: January 2022 - present.
3. Member of the Editorial Board, *Calcutta Statistical Association Bulletin*, published by *Calcutta Statistical Association*: 2016, 2020, 2021.
4. Associate Editor, *Sankhya Series A*, published by *Springer*: January 2016 - December 2018.
5. Member of the Editorial Board, *Little Mathematical Treasures*, published jointly by *Ramanujan Mathematical Society* and *Universities Press*: January 2012 - present.
6. Member of the Scientific Committee & the Editorial Board, *Colombian Journal of Statistics (Revista Colombiana de Estadística, RCE)*, published by *Universidad Nacional de Colombia*: June 2015 - October 2016.
7. Book Editing: Revised and edited the Ninth Edition of the book *Miller & Freund's Probability and Statistics for Engineers* by *Richard A. Johnson* published by *Pearson*: 2016.
8. Book Editing: Revised and edited the Second Edition of the book *Measure Theory and Probability* by *A. K. Basu* published by *PHI Learning*: 2010.

## Honors and Awards

- Elected Member of the International Statistical Institute (ISI): September 2020 - present.
- Recipient of the *SERB-MATRICES* grant for three years from the Department of Science and Technology (DST), Government of India: 2019 - 2022.
- The *World Bank Trust Fund for Statistical Capacity Building (WB-TFSCB)* from the International Statistical Institute (ISI), The Hague, The Netherlands: 2017.
- The *IISA Young Researcher Award in the Theory and Probability Category* from the International Indian Statistical Association, USA: 2016.
- One of the Finalist of the *NASI SCOPUS Young Scientist Awards* given by National Academy of Sciences, India and Elsevier Research Solutions, South Asia: 2014.
- The *MSR Young Faculty Award* from the Microsoft Research and Indian Statistical Institute, Calcutta, India: 2008 – 2009.
- The *Loeve Fellowship* for graduate students in probability from the Department of Statistics, University of California, Berkeley: 2002 – 2003.
- The *Laha Award* from the Institute of Mathematical Statistics, USA: July 2004 and July 2002.
- The *Teaching Effectiveness Award* and the *Outstanding Graduate Student Instructor Award* from the GSI Center, Graduate Division, University of California, Berkeley: May 2002.
- The *Alumni Association Gold Medal* and the *M. R. Iyer Memorial Prize* from the Indian Statistical Institute, Calcutta, for outstanding performance in Master of Statistics curriculum: May 1998.
- *NBHM Scholarship* from the National Board of Higher Mathematics, India, for outstanding performance in the Indian National Mathematics Olympiad and subsequent training in Algebra and Analysis: 1993 - 1998.
- *Indian National Mathematical Olympiad Award* from the National Board of Higher Mathematics, India: 1992 - 1993.
- *National Merit Scholar* of India: 1991, 1993.

## Externally Funded Project

1. Principle investigator for the *Safety Monitoring Capabilities for Indian Airspace Project* from the *Air Traffic Management, Airport Authority of India, Ministry of Civil Aviation*: 2011 - present. [co-investigator Deepayan Sarkar]

## Visiting Positions Held

- Visiting Associate Professor, *Department of Mathematics, University of Uppsala*, Uppsala, Sweden, August 2019.
- Visiting Associate Professor, *Department of Stochastic, Budapest University of Technology and Economics*, Budapest, Hungary, June 2018.
- Visiting Scientist, *Institute of Statistical Mathematics*, Tachikawa, Tokyo, Japan, November 2017.

- Visiting Associate Professor, *Department of Statistics, University of California, Berkeley*, Berkeley, CA, September 2013 - May 2014.
- Visiting Assistant Professor, *Department of Statistics and Applied Probability, National University of Singapore*, Singapore, June 2010.
- Visiting Assistant Professor, *Department of Mathematics, University of Münster*, Münster, Germany, May - June 2009.
- Visiting Fellow, *Institute for Mathematical Sciences and Department of Statistics and Applied Probability, National University of Singapore*, Singapore, May - July 2008.
- Visiting Fellow, *Technion – Israel Institute of Technology*, Haifa, Israel, May - July 2007.

## Teaching Experience

1. Master level course on *Probability Theory*, Indian Statistical Institute, New Delhi, India: Fall 2022 [14 weeks with 4 hours per week].
2. Master level online course on *Measure Theoretic Probability*, Indian Statistical Institute, Kolkata and New Delhi, India: Spring 2022 [14 weeks with 4 hours per week].
3. Master level online course on *Theory of Martingales*, for the students with the *Probability Specialization* and *Theoretical Statistics Specialization*, Indian Statistical Institute, Kolkata, India: Fall 2021 [14 weeks with 4 hours per week].
4. Bachelor level online course on *Introduction to Stochastic Processes*, Indian Statistical Institute, Kolkata, India: Fall 2020 [14 weeks with 4 hours per week].
5. Bachelor level online course on *Probability Theory III*, Indian Statistical Institute, Kolkata, India: Fall 2020 [14 weeks with 4 hours per week].
6. Bachelor level (optional) online course on *Random Graphs*, Indian Statistical Institute, Kolkata, India: Spring 2020 [14 weeks with 4 hours per week].
7. Master level course on *Measure Theoretic Probability*, Indian Statistical Institute, New Delhi, India: Spring 2019 [14 weeks with 4 hours per week].
8. Master level course on *Theory of Martingales*, for the students with the *Probability Specialization* and *Theoretical Statistics Specialization*, Indian Statistical Institute, Kolkata, India: Fall 2018 [14 weeks with 4 hours per week].
9. Master level course on *Measure Theoretic Probability*, Indian Statistical Institute, New Delhi, India: Spring 2018 [14 weeks with 4 hours per week].
10. Master level course on *Measure Theoretic Probability*, Indian Statistical Institute, New Delhi, India: Spring 2017 [14 weeks with 4 hours per week].
11. Master level course on *Probability Theory*, Indian Statistical Institute, New Delhi, India: Fall 2016 [14 weeks with 4 hours per week].
12. Master level course on *Linear Algebra and Linear Models*, Indian Statistical Institute, New Delhi, India: Fall 2015 [14 weeks with 4 hours per week].
13. Master level course on *Advance Probability (Radon-Nikodym Theorem, Conditional Expectation, Martingales)* for second year students with *Mathematical Statistics and Probability* specialization, Indian Statistical Institute, Calcutta, India: Fall 2014 [14 weeks with 4 hours per week].



14. Upper division undergraduate course on *Concepts of Probability* (Stat-134), Department of Statistics, UC Berkeley, USA: Spring 2014 [14 weeks with 3 hours per week].
15. Upper division undergraduate course on *Game Theory* (Stat-155), Department of Statistics, UC Berkeley, USA: Fall 2013 [14 weeks with 3 hours per week].
16. Graduate course on *Measure Theoretic Probability* for first year Ph.D. students and Master students, Indian Statistical Institute, New Delhi, India: Spring 2013 [14 weeks with 4 hours per week].
17. Master level course on *Markov Chains* Indian Statistical Institute, New Delhi, India: Fall 2012 [5 weeks with 4 hours per week].
18. Graduate course on *Percolation Theory* for first year Ph.D. students students and second year master students with *Advanced Probability* specialization, Indian Statistical Institute, New Delhi, India: Fall 2012 [14 weeks with 4 hours per week].
19. Graduate course on *Measure Theoretic Probability* for first year Ph.D. students students, Indian Statistical Institute, New Delhi, India: Fall 2011 [14 weeks with 4 hours per week].
20. Master level course on *Advance Probability (Radon-Nikodym Theorem, Conditional Expectation, Martingales)* for second year students with *Mathematical Statistics and Probability* specialization, Indian Statistical Institute, Calcutta, India: Fall 2011 [jointly with Parthanil Roy] [5 weeks with 4 hours per week].
21. Graduate course on *Advanced Analysis (Positive Borel Measures,  $L_p$ -Spaces, Fourier Series, Signed Measures, Radon-Nikodym)* for first year Ph.D. students and second year Master students, Indian Statistical Institute, New Delhi, India: Spring 2011 [14 weeks with 4 hours per week].
22. Graduate course on *Measure Theoretic Probability* for first year Ph.D. students and second year Master students, Indian Statistical Institute, New Delhi, India: Fall 2010 [14 weeks with 4 hours per week].
23. Graduate course on *Advance Probability (Martingale, Radon-Nikodym, Conditional Expectation)* for first year Ph.D. students, Indian Statistical Institute, New Delhi, India: Spring 2010 [14 weeks with 4 hours per week].
24. Graduate course on *Branching Processes* for first and second year Ph.D. students, Indian Statistical Institute, New Delhi, India: Fall 2009 [14 weeks with 4 hours per week].
25. Graduate course on *Measure Theoretic Probability* for first year Ph.D. students and Master students, Indian Statistical Institute, New Delhi, India: Spring 2009 [14 weeks with 4 hours per week].
26. Graduate level course on *Random Walks in Random Environments* for advance Ph.D. students in probability theory, Indian Statistical Institute, Calcutta, India: Fall 2008 [14 weeks with 4 hours per week].
27. Master level course on *Advance Probability (Radon-Nikodym Theorem, Conditional Expectation, Martingales)* for second year students with *Mathematical Statistics and Probability* specialization, Indian Statistical Institute, Calcutta, India: Fall 2008 [14 weeks with 4 hours per week].
28. Master level course on *Linear Models and GLM*, Indian Statistical Institute, New Delhi, India: Spring 2008 [14 weeks with 4 hours per week].
29. Graduate course on *Measure Theoretic Probability* for first year Ph.D. students, Indian Statistical Institute, New Delhi, India: Fall 2007 [14 weeks with 4 hours per week].
30. Master level course on *Measure Theoretic Probability*, Indian Statistical Institute, New Delhi, India: Spring 2007 [14 weeks with 4 hours per week].

31. Upper division undergraduate course on *Concepts of Probability* (Stat-134), Department of Statistics, UC Berkeley, USA: Fall 2002 [14 weeks with 3 hours per week].

### Training Program

1. Invited lecturer in the *Advanced Instructional School on Stochastic Processes*, hosted by NISER, Bhubaneswar, India, June 17 - July 12, 2019.
2. Invited lecturer in the *Advanced Instructional School on Stochastic Processes*, hosted by NISER, Bhubaneswar, India, June 25 - July 21, 2018.
3. RMS Invited Speaker in the *5th Teacher's Training Program: Empowering the Mathematics Teacher*, jointly organized by Azim Premji University (APU) and Ramanujan Mathematical Society (RMS) at Sanskriti School, New Delhi, India, October 13 - 14, 2016.
4. Mentor for Mathematics for the *Science Camp for the Class X students* under the INSPIRE Fellowship Program of the Department of Science and Technology, Government of India held at the Deshbandu College, University of Delhi, New Delhi, India, December 14 - 18, 2015.
5. RMS Invited Speaker in the *4th Teacher's Training Program: Empowering the Mathematics Teacher*, jointly organized by Azim Premji University (APU) and Ramanujan Mathematical Society (RMS) at Sanskriti School, New Delhi, India, October 9 - 10, 2015.
6. RMS Invited Speaker in the *3rd Teacher's Training Program: Empowering the Mathematics Teacher*, jointly organized by Azim Premji University (APU) and Ramanujan Mathematical Society (RMS) at Sanskriti School, New Delhi, India, May 8 - 9, 2015.
7. Speaker and organizer of the *Workshop on Basic Statistics and Probability* funded by the Power System Operation Corporation Ltd. (POSOCO) held at Indian Statistical Institute, New Delhi, India, February 25 - 27, 2015 [jointly with Arijit Chakrabarty, Isha Dewan and Deepayan Sarkar] [3 days and 3 hours per day].
8. Speaker and Organizer of the *Workshop on Airspace Safety Monitoring* funded by Airports Authority of India, held at Indian Statistical Institute, New Delhi, India, May 7 - 11, 2012 [jointly with Deepayan Sarkar] [5 days and 3 hours per day].

### Presentations

#### • Mini Courses Given in Conferences/Workshops:

1. Four lectures on *Random recursive tree, branching Markov chains, and urn models*, Fourth Russian-Indian Joint Conference in Statistics and Probability, The Euler International Mathematical Institute, Saint Petersburg, Russia, June 2019.
2. Four lectures on *Random Graphs*, School of Mathematical Sciences, NISER, Bhubaneswar, India, October 2017.
3. Five lectures on *Random Graphs*, Department of Statistics, Mysore University, Mysore, India, May 2016.
4. Two lectures on *Finite State Markov Chains and Mixing*, NCM Workshop on Probability and Representation Theory, Institute of Mathematical Sciences (IMSc), Chennai, India, March 2016.
5. Five lectures on *Random Graphs*, Advanced Training in Mathematics Workshop on Applied Probability, Indian Institute of Technology (IIT), Bombay at Mumbai, India, January 2016.

6. Three Lectures on *Random Walks in Random Environments*, Workshop on Reinforced Random Walks and Random Walks in Random Environment, Indian Statistical Institute (ISI), Bangalore, India, December 2008.
7. Eight Lectures on *Local Weak Convergence and Objective Method*, Second Lectures on Probability and Stochastic Processes, Indian Statistical Institute (ISI), Bangalore, India, November 2007.
8. Three Lectures on *Preferential Attachment Model*, Workshop on Random Graphs, Tata Institute of Fundamental Research (TIFR), Mumbai, India, September 2007.
9. Three Lectures on *Recursive Distributional Equations*, Mini-Workshop on Recursive Distributional Equations, J.W. Goethe Universität Frankfurt a.M., Germany, March 2005.

• **Conferences/Workshops Attended as an Invited Speaker:**

1. *5th International Conference on Recent Advances in Mathematical Sciences and its Applications (RAMSA-2021)*, Online, December 2021.
2. *Bernoulli - IMS One World Symposium*, Online, August 2020.
3. *ISI-ISM-ISSAS Joint Conference*, Academia Sinica, Taipei, Taiwan, January 2019.
4. *9th International Workshop on Applied Probability (IWAP)*, Budapest, Hungary, July 2018.
5. *ISI - NETWORKS Conference in Probability*, Indian Statistical Institute, Kolkata, India, January - February, 2018.
6. Special Invited Speaker, *IISA Conference on Statistics, Probability and Data Analysis*, Hyderabad, India, December 2017.
7. *ISI-ISM-ISSAS Joint Conference*, Institute of Statistical Mathematics (ISM), Tokyo, Japan, November 2017.
8. *61st ISI World Statistics Congress*, Marrakech, Morocco, July 2017.
9. *ISI-ISM-ISSAS Joint Conference*, Indian Statistical Institute, Delhi Centre, February 2017.
10. *Complex Networks and Emerging Applications*, International Centre for Mathematical Sciences (ICMS), Edinburgh, UK, March 2016.
11. Keynote Speaker for Mathematics Track, *International Conference on Recent Trends in Engineering and Material Sciences (ICEMS)*, Jaipur national University, Jaipur, India, March 2016.
12. *ISI-ISM-ISSAS Joint Conference*, Academia Sinica, Taipei, Taiwan, February 2016.
13. Special Invited Speaker, *IISA Conference on Statistics, Probability and Data Analysis*, Pune, India, December 2015.
14. *Conference in Analysis and Probability: Celebrating Professor B. V. Rao's 70th Birthday*, Indian Statistical Institute (ISI), New Delhi, India, November 2015.
15. *RASMAG/20, RASMAG/17, RASMAG/16, RASMAG/15 and RASMAG/14*, International Civil Aviation Organization (ICAO), Asia Pacific Region Office, Bangkok, Thailand, May 2015, August 2012, February 2012, August 2011 and February 2011.
16. *ISI-ISM-ISSAS Joint Conference*, Institute of Statistical Mathematics (ISM), Tokyo, Japan, April 2015.
17. *Indo - German Workshop on Algorithms*, Indian Statistical Institute (ISI), Kolkata, India, March 2015.
18. *ATC Officer's Guild: All India Conference*, New Delhi, India, October 2014.
19. *CNS Officer's Guild: All India Conference*, Kolkata, India, September 2014.
20. *One Day Symposium on Probability Theory and Its Applications*, Indian Statistical Institute (ISI), Kolkata, India, August 2014.

21. *17th INFORMS Applied Probability Society Annual Conference*, San Jose, Costa Rica, July 2013.
22. *28th Annual Conference of Ramanujan Mathematical Society*, Bangalore, June 2013.
23. *New Directions in Probability*, Indian Statistical Institute (ISI), Bangalore, May 2013.
24. *Limit Theorems in Probability*, Indian Institute of Science (ISI), Bangalore, January 2013.
25. *8th Triennial Calcutta Symposium*, Department of Statistics, Calcutta University, Kolkata, India, December 2012.
26. *26th Annual Conference of Ramanujan Mathematical Society*, Department of Mathematics, Allahabad University, Allahabad, October 2011.
27. *ICM Satellite Meeting on Probability*, Indian Statistical Institute (ISI), Bangalore, India, August 2010.
28. *7th Triennial Calcutta Symposium*, Department of Statistics, Calcutta University, Kolkata, India, December 2009.
29. *Conference on Probability and Stochastic Process*, Indian Statistical Institute (ISI), New Delhi, India, November 2009.
30. *Ninth Münster - Kiel Kolloquium*, Institut für Mathematische Statistik, WWU Münster, Germany, May 2009.
31. *First Indo-Brazilian Symposium in Mathematics*, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil, July 2008.
32. *Recent Advances in Probability, ISI Platinum Jubilee Celebration*, Indian Statistical Institute (ISI), Calcutta, India, December 2007.
33. *Conference in Honor of Professor Kalyan B. Sinha*, Indian Statistical Institute (ISI), New Delhi, India, December 2006.
34. *Analysis of Algorithms 2006*, Alden Biesen, Belgium, July 2006.
35. *Conference on Probability and Statistics*, Indian Statistical Institute (ISI), Calcutta, India, January 2006.
36. *Workshop on Motion on Random Media*, Department of Mathematics, University of Minnesota, Minneapolis, USA, August 2005.
37. *8th North American New Researchers Conference*, Department of Statistics, University of Minnesota, Minneapolis, USA, August 2005.
38. *Conference on Recent Advances in Probability and Stochastic Processes*, Indian Statistical Institute (ISI), Calcutta, India, January 2005.
39. *International Conference on the Future of Statistical Theory, Practice and Education*, Hyderabad, India, December 2004.
40. *Kiel-Göteborg Workshop on Probability and Combinatorics*, Kiel, Germany, November 2004. (*One of the main speaker*).
41. *Fourth International Conference on Probability and its Applications and 65th Annual Meeting of the IMS*, Banff, Canada, August 2002.
42. *International Conference on Probability and Mathematical Statistics in honor of Professor C. R. Rao on his 80th birthday*, Indian Statistical Institute (ISI), Calcutta, India, December 2000.

• **Seminars Given as an Invited Speaker:**

1. *Mathematics Colloquium (Online)*, Department of Mathematics, Ashoka University, Sonipath, India, January 2022.
2. *Probability Victoria Seminar (Online)*, School of Mathematics and Statistics, University of Melbourne, Melbourne, Australia, November 2020.

3. *Probability and Statistics Colloquium*, Chalmers University of Technology, Göteborg, Sweden, August 2019, August 2006, September 2005, September 2004.
4. *Probability Colloquium*, Uppsala University, Uppsala, Sweden, August 2019.
5. *Probability Colloquium*, Budapest University of Technology and Economics, Budapest, Hungary, June 2018.
6. *Tokyo Probability Seminar*, Graduate School of Mathematical Sciences, University of Tokyo, Tokyo, Japan, November 2017
7. *Stat Math Unit Seminar*, Indian Statistical Institute, New Delhi, India, September 2017, February 2016, August 2013, April 2011, January 2010, January 2009, January 2007, October 2006, May 2006.
8. *ISI, Bangalore and IISc Joint Probability Seminar*, Indian Statistical Institute, Bangalore, India, April 2016, October 2009.
9. *Department Colloquium*, Department of Statistics Science, University Collage of London (UCL), London, UK, March 2016.
10. *Probability and Statistics Colloquium*, Indian Statistical Institute, Calcutta, India, January 2016, August 2013, March 2010, August 2007, November 2006, January 2006, January 2005, January 2002, January 2001.
11. *Probability Seminar*, Department of Mathematics, University of California, Davis, Davis, USA, May 2014.
12. *Statistics Seminar*, Department of Statistics, University of California, Riverside, Riverside, USA, May 2014.
13. *Stochastic and Statistics Seminar*, Solan School of Management, Massachusetts Institute of Technology (MIT), Boston, USA, May 2014.
14. *Probability Seminar*, Department of Statistics, University of California, Berkeley, USA, September 2013, October 2002.
15. *Probability Seminar*, Department of Mathematics and Department of Statistics and Applied Probability, National University of Singapore, Singapore, June 2010, July 2008, April 2008.
16. *CeNoS - Kolloquium*, Department of Physics, University of Münster, Münster, Germany, June 2009.
17. *Probability Seminar*, ETH and University of Zürich, Zürich, Switzerland, May 2009.
18. *ISI, Bangalore and IISc, Bangalore Joint Probability Seminar*, IISc, Bangalore, India, February 2009.
19. *Monday Colloquium*, Indian Statistical Institute, Calcutta, India, October 2008.
20. *Probability and Stochastic Processes Seminar*, Department of Mathematics and Department of Electrical Engineering, Technion, Haifa, Israel, June 2007.
21. *Mathematics Colloquium* (via Video Conference), Department of Mathematics, National University of Singapore, Singapore, March 2006.
22. *Probability Colloquium*, Department of Mathematics, Cornell University, Ithaca, USA, February 2006.
23. *Probability and Statistics Colloquium*, Division of Applied Mathematics, Brown University, Providence, USA, February 2006.
24. *Combinatorics and Probability Seminar*, Department of Mathematics, University of Pennsylvania, Philadelphia, USA, February 2006.
25. *Stochastic Process Seminar*, Department of Mathematics, Christian-Albrechts University of Kiel, Kiel, Germany, July 2005.

26. *RSS Seminar*, EURANDOM, Eindhoven, The Netherlands, November 2004.
27. *Probability Colloquium*, IBM T. J. Watson Research Center, New York, USA, April 2004.
28. *Probability Colloquium*, Department of Mathematics, University of Wisconsin, Madison, USA, February 2004.
29. *Probability Colloquium*, Department of Mathematics, University of Minnesota, Minneapolis, USA, November 2003.
30. *Mahalanobis Symposium on Probability and Statistics*, Indian Statistical Institute, Calcutta, India, July 1998.

### Contributions in National of International Academic Committees

1. Member as the representative from India in the five member *Karl Pearson Award Committee* under *International Statistical Institute*, the award is given in recognition of a research contribution that has had profound influence on statistical theory, methodology, practice, or applications: 2018 - 2019.
2. Member as Representative of ISI, Director in the *JEE Apex Board (JAB) Committee for Review of the School Board Marks and JEE(Main) Formula*: 2015 - 2017.
3. Member in the *National Selection Committee for the Fulbright-Nehru Doctoral Research Fellowships* under *United States-India Educational Foundation (USIEF)*: 2015 - 2016.

### Academic Administration

1. Elected Member from the Theoretical Statistics and Mathematics Division to the *Council of Indian Statistical Institute*: 2020 - 2022.
2. *Professor-in-Charge of the Theoretical Statistics and Mathematics Division*: September 2020 - 2022.
3. Member *Academic Council*: January 2020 - present.
4. *Associate Dean* of Indian Statistical Institute, Delhi Centre: October 2016 - June 2018.
5. Elected member from Theoretical Statistics and Mathematics Division to the *Academic Council*: September 2014 - August 2016.
6. Member and Convener *Standing Award Committee*: September 2018 - 2022.
7. Member and Convener *Student Brochure Committee*: 2016 - 2020.
8. Member *Student's Educational Tour Committee*: 2017 - 2018.
9. Member *Student's Contingency Utilization Committee*: 2017 - 2018.
10. Member *Dalit Students Grievance Committee*: January 2017 - 2018.
11. Member *ISI Library Coordination Committee*: 2016 - 2017.
12. Member *National Pension Scheme Committee*: December 2014 - 2020.
13. Member *Internal Complain Committee (Anti-Sexual Harassment Committee)*, ISI, Delhi Centre: October 2015 - June 2018.
14. Member *M.Stat. Selection Committee*: 2023, 2022, 2019, 2018, 2016.

15. Member *B.Stat. Selection Committee*: 2019, 2017, 2014.
16. Member *JRF(Mathematics) Selection Committee*: 2015, 2013.
17. Member *JRF(Statistics) Selection Committee*: 2016.
18. Member *Prospectus Committee*: 2017.
19. Member and/or Convener *D. Basu Gold Medal Committee*: 2022, 2021, 2020, 2018.
20. Member and/or Convener *P. C. Mahalanabis Gold Medal Committee*: 2020, 2016, 2011.
21. Member *Reservation and Transparency in Admission Committee*: April 2016 - November 2016.
22. Member *Accounts Committee*: October 2015 - December 2016.
23. Member *Library Committee of ISI, Delhi Centre*: 2015 - 2016.
24. Member and Convener *Post Graduate Diploma in Business Analytics (PCDBA) Revision Committee*: 2015.
25. Member *Uniform Policy and Procedure for Faculty Recruitment Committee*: 2013.
26. Member and Convener *Research Fellow Advisory Committee (RFAC)*, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Delhi: May 2011 - July 2013.
27. Member *Research Fellow Advisory Committee (RFAC)*, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Delhi: October 2010 - April 2011.
28. Member *M.Stat. Review Committee*: 2018 - present.
29. Member *B.Stat.-M.Stat. Review Committee*: 2010 - 2017.
30. Member *Uniform Pass/Fail/Repeat/Stipend Rule Committee*: 2011 - 2012.
31. Member *Guest House Committee*, Indian Statistical Institute, Delhi Centre: 2010 - 2011.
32. Member *Auditorium Renovation Committee*, Indian Statistical Institute, Delhi Centre: 2009 - 2011.

### Conference/Lecture Series Organization

1. Co-organizer of the *One Day Symposium on Probability Theory and Its Applications*: 2014 [jointly with Parthanil Roy].
2. Founding member and co-organizer of the *ISI Lectures on Probability*: 2011 - present [jointly with Krishanu Maulik].
3. Founding member and co-organizer of the *Lectures on Probability and Stochastic Processes (LPS)*: 2006 - 2014 [jointly with Siva Athreya and Krishanu Maulik].

### Other Professional Experience

- **Referee for Journals:**
  - *ACM-SIAM Symposium on Discrete Algorithms*.
  - *Acta Mathematica*.

- *Annals of Mathematics.*
- *Annals of Probability.*
- *Annals of Applied Probability.*
- *Annales de l'IHP.*
- *Bernoulli.*
- *Calcutta Statistical Association Bulletin.*
- *Discrete Mathematics and Theoretical Computer Science.*
- *Electronic Journal of Probability.*
- *Electronic Communications in Probability.*
- *Kuwait Journal of Science.*
- *Mathematics of Operations Research.*
- *Probability Theory and Related Fields.*
- *Proceedings Mathematical Sciences.*
- *Random Structures and Algorithms.*
- *Operations Research.*
- *Sankhyā and Sankhyā - A.*
- *Statistics and Probability Letters.*
- *Stochastic Processes and Applications.*
- *Theoretical Computer Science.*

- **Organization of Invited Session in International Conference:**

- Organized an invited session on *Recent Developments in Random Graphs* in the 61st ISI World Statistics Congress, Marrakesh, Morocco, 2017.
- Organized an invited session on *Urn Models and Its Applications* in the IISA Conference on Probability, Statistics, and Data Analysis, Pune, India, 2015.
- Organized an invited session on *Random Graphs* in the IISA Conference on Probability, Statistics, and Data Analysis, Riverside, USA, 2014.
- Organized an invited session on *Urn Models and Their Applications* in the International Workshop on Applied Probability (IWAP), Antalya, Turkey, 2014.
- Organized an invited session on *Random Networks and Statistical Physics Models* in the IISA Conference on Probability, Statistics, and Data Analysis, Raleigh, USA, 2011.

- **Seminar Organization:**

- Organized the Stat Math Unit Weekly Seminar from October 2006 - December 2010. at Indian Statistical Institute, New Delhi, India.
- Co-organized the Postdoctoral Colloquium for the year 2003 - 2004. at the Institute for Mathematics and Its Applications, University of Minnesota, Minneapolis, USA.

### Membership in Academic Organizations

- American Mathematical Society (AMS): 2000 - present.
- Bernoulli Society (BS): 2015 - present.



- Calcutta Statistical Association (CSA): 2012 - present [Life Member].
- INFORMS: Applied Probability Society: 2013 - present.
- Institute of Mathematical Statistics (IMS): 2000 - present.
- International Indian Statistical Association (IISA): 2014 - present [Life Member]
- International Statistical Institute (ISI): 2017 - present.
- Ramanujam Mathematical Society (RMS): 2015 - present [Life Member]