

# SUPRIO BHAR

Curriculum Vitae

**Designation:** Associate Professor,  
Department of Mathematics and Statistics,  
Indian Institute of Technology Kanpur,  
Kanpur - 208 016, India.

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## Professional Experience:

- July 1, 2024 to date: Associate Professor, Department of Mathematics and Statistics, Indian Institute of Technology Kanpur.
- April 2, 2018 to June 30, 2024: Assistant Professor, Department of Mathematics and Statistics, Indian Institute of Technology Kanpur.
- July 1, 2016 - February 28, 2017: NBHM (National Board for Higher Mathematics) Post-Doctoral Fellow at Tata Institute of Fundamental Research (TIFR) - Centre for Applicable Mathematics, Bangalore
- August 3, 2015 - June 30, 2016: Post-Doctoral Fellow at Tata Institute of Fundamental Research (TIFR) - Centre for Applicable Mathematics, Bangalore

## Educational Qualification and Post-Doctoral Experience:

- Ph.D in Mathematics, Indian Statistical Institute. Date: 28th July, 2015.
  - Thesis Title: *Semimartingales and Stochastic Partial Differential Equations in the space of Tempered Distributions*
  - Supervisor: Rajeev, B.,  
Professor,  
Theoretical Statistics and Mathematics Unit,  
Indian Statistical Institute, Bangalore Centre.  
✉: brajeev@isibang.ac.in
- Master of Mathematics (M.Math) (2009)  
Indian Statistical Institute.  
Duration: 2007-2009
- B.Sc (Hons) in Mathematics (2007)  
Ramakrishna Mission Vidyamandira,  
Belur, Howrah, West Bengal.  
(Affiliated to University of Calcutta)  
Duration: 2004-2007

## Research Interests:

- Stochastic Differential Equations and Stochastic Partial Differential Equations in finite and infinite dimensional spaces.
- Hilbert valued Stochastic Processes.
- Applications of Probability.
- Mathematical Finance.

## Publications/Preprints:

- Suprio Bhar and Barun Sarkar, *Stochastic PDEs involving a bilaplacian operator*, Potential Analysis **64** (2026), article number 5. <https://doi.org/10.1007/s11118-025-10250-z>
- Suprio Bhar, Ritwik Mukherjee and Prathmesh Patil, *A Convergence Rate for Kac's Central Limit Theorem*, Statistics and Probability Letters (2025), Volume 219. <https://doi.org/10.1016/j.spl.2024.110329>

- Suprio Bhar, Rajeev Bhaskaran and Arvind Kumar Nath, *Existence and Uniqueness of Stochastic PDEs associated with the Forward Equations: An Approach using Alternate Norms*, Infinite Dimensional Analysis, Quantum Probability and Related Topics (2025+), Online ready version: <https://doi.org/10.1142/S0219025725500079>
- Suprio Bhar and Barun Sarkar, *Weak Solutions of SPDEs in the space of Tempered Distributions*, Journal of Stochastic Analysis (2025), Vol. 5: No. 4, Article 3. DOI: 10.31390/josa.5.4.03
- Suprio Bhar, Imran H. Biswas, Saibal Khan and Guy Vallet, *Kolmogorov continuity and stability of sample paths of entropy solutions of stochastic conservation laws*, Journal of Hyperbolic Differential Equations, (2023).
- Arvind Kumar Nath and Suprio Bhar, *Lévy flows and associated Stochastic PDEs*, Electronic Journal of Probability (2023).
- Suprio Bhar, Rajeev Bhaskaran and Barun Sarkar, *Solutions of SPDE's associated with a stochastic flow*, Potential Analysis **53** (2020), no. 1, 203–221.
- Suprio Bhar, Rajeev Bhaskaran and Barun Sarkar, *Stochastic PDEs in  $\mathcal{S}'$  for SDEs driven by Lévy noise*, Random Operators and Stochastic Equations **28** (2020), no. 3, 217–226.
- Suprio Bhar and Barun Sarkar, *Parametric family of SDEs driven by Lévy noise*, Communications on Stochastic Analysis **12** (2018), no. 2, 157–173.
- Suprio Bhar, *Characterizing Gaussian Flows Arising from Itô's Stochastic Differential Equations*, Potential Analysis **46** (2017), no. 2, 261–277.
- Suprio Bhar, *An Itô Formula in the Space of Tempered Distributions*, Journal of Theoretical Probability **30** (2017), no. 2, 510–528.
- Suprio Bhar, *Stationary solutions of stochastic partial differential equations in the space of tempered distributions*, Communications on Stochastic Analysis **11** (2017), no. 2, 169–193.
- Suprio Bhar and B. Rajeev, *Differential Operators on Hermite Sobolev Spaces*, Proceedings of the Indian Academy of Sciences - Mathematical Sciences **125** (2015), issue 1, 113–125.
- Siva Athreya, Suprio Bhar and Atul Shekhar, *Smoothness of Flow and Path-by-Path uniqueness in Stochastic Differential Equations*, Preprint arXiv:1709.02115 [math.PR].
- Suprio Bhar and Subhra Sankar Dhar, *Testing Independence of Infinite Dimensional Random Elements: A Sup-norm Approach*. Preprint arXiv:2301.00375 [math.ST]
- Suprio Bhar and Subhra Sankar Dhar, *Co-variance Operator of Banach Valued Random Elements: U-Statistic Approach*. Preprint arXiv:2307.03356 [math.ST]
- Suprio Bhar, Mrinmay Biswas and Mangala Prasad, *Finite Element Approximations of Stochastic Linear Schrödinger equation driven by additive Wiener noise*. Preprint arXiv:2410.06006 [math.NA]
- Suprio Bhar and Arvind Kumar Nath, *New Approaches to the Monotonicity Inequality for Linear Stochastic PDEs*, Preprint arXiv:2501.09392 [math.FA]
- Suprio Bhar, Mrinmay Biswas and Mangala Prasad, *Full Discretization of Stochastic Semilinear Schrödinger equation driven by multiplicative Wiener noise*, Preprint arXiv:2504.14939 [math.NA]
- Suprio Bhar, Barun Sarkar and Purba Das, *Pathwise Itô Isometry for scaled quadratic variation*, Preprint arXiv:2504.18290 [math.PR]
- Tapan Kar, Suprio Bhar, Barun Sarkar and Sesha Meka, *Call Option Price using Pearson Diffusion Processes*, Preprint arXiv:2508.14577 [q-fin.MF]

**Ph.D and Post-Doctoral Fellow supervision:**

- Mr. Mangala Prasad (ongoing, Ph.D supervision jointly with Prof. Mrinmay Biswas, IIT Kanpur)
- Mr. Sripati Mazumder (ongoing, Ph.D supervision jointly with Prof. Barun Sarkar, IIT Madras)
- Mr. Arvind Kumar Nath (Defended Ph.D thesis on May 16, 2025). Thesis title: Linear Stochastic PDEs in the Space of Tempered Distributions
- Dr. Saibal Khan (Post-Doctoral supervision, jointly with Prof. Indranil Chowdhury, IIT Kanpur) duration: November 2, 2023 to November 1, 2024

**Personal Details:**

- Gender: Male.
- Nationality: Indian.

**Academic Achievements/ Awards:**

- Excellence-in-Teaching award 2023, Indian Institute of Technology Kanpur, India.
- DST INSPIRE Faculty Award (July 2017, session II)
- National Board for Higher Mathematics (NBHM) Post Doctoral Fellowship
- Joint CSIR-UGC test for Junior Research Fellowship and Eligibility for Lectureship (NET, held on 18 December, 2011) Qualified. Ranked 6th.
- National Board for Higher Mathematics (NBHM) Masters Scholarship (2007) (duration: 2007-2009).
- First class First position in B.Sc(Hons) in Mathematics, University of Calcutta.

**Teaching experience/ Teaching Assistantship:**

- Teaching at IIT Kanpur:
  - 2025-26 Odd semester: Probability Theory (MTH754)
  - 2024-25 Summer term: Complex Analysis (MTH434M, modular)
  - 2024-25 Even semester: Elementary Stochastic Processes I (MTH212M, modular first half), Elementary Stochastic Processes II (MTH313M, modular second half), Introduction to Stochastic Calculus (MTH614)
  - 2024-25 Odd semester: Introduction to Probability Theory (MSO205)
  - 2023-24 Even semester: Probability Theory (MTH309)
  - 2023-24 Odd semester: Probability Theory (MTH754)
  - 2022-23 Even semester: Introduction to Stochastic Calculus (MTH614A)
  - 2022-23 Odd semester: Introduction to Probability Theory (MSO205A)
  - 2021-22 Even semester: Probability and Statistics (MSO201A)
  - 2021-22 Odd semester: Basic Probability and Distribution Theory (MTH431A)
  - 2020-21 Even semester: Probability Theory (MTH309A)
  - 2020-21 Odd semester: Basic Probability and Distribution Theory (MTH431A)
  - 2019-20 Even semester: Probability Theory (MTH309A)
  - 2019-20 Odd semester: Basic Probability and Distribution Theory (MTH431A)
  - 2018-19 Even semester: Probability Theory (MTH309A) and Introduction to Stochastic Calculus (MTH614A).
  - 2018-19 Odd semester: Probability Theory (MTH754A)
- TA for three B.Math courses (as a research scholar at Indian Statistical Institute, Bangalore) on Basic Probability Theory
- TA for one M.Math course (as a research scholar at Indian Statistical Institute, Bangalore) on Measure Theoretic Probability

**Knowledge dissemination:** I developed two 8-Week long NPTEL courses:

- Measure Theoretic Probability 1 (<https://nptel.ac.in/courses/111104152>)
- Measure Theoretic Probability 2 (<https://nptel.ac.in/courses/111104168>)

#### **Experience as a reviewer:**

- Reviewer for Indian Journal of Pure and Applied Mathematics, Stochastic Analysis and Applications, Sankhya A, Mathematical Reviews/MathSciNet

#### **Selected Talks:**

- Delivered an invited talk ‘The Monotonicity Inequality for Linear Stochastic PDEs’ at the Harish-Chandra Research Institute, Prayagraj, India on July 18, 2024.
- Delivered an invited talk ‘Levy Flows and Associated Stochastic PDEs’ at the King’s College London, UK on June 26, 2024.
- Delivered an invited talk “Brownian Motion and Stochastic Differential Equations” at the IFMR Graduate School of Business, Krea University, India on June 6, 2024 (<https://krea.edu.in/ifmrgsb/event/brownian-motion-and-stochastic-differential-equations/>)
- Delivered an invited Mathematics Colloquium talk ‘Stochastic Flows and Associated Stochastic PDEs’ at the Harish-Chandra Research Institute, Prayagraj, India on August 24, 2023.
- Delivered an invited talk ‘Finite-dimensional Realizations for Stochastic PDEs’ (online) at the 6th International Conference on Econometrics and Statistics (EcoSta 2023), Hybrid Conference, Waseda University, Tokyo, Japan during August 1-3, 2023.
- Delivered a series of 10 lectures ‘Measure Theoretic Probability 1’ at the Advanced Instructional School on Stochastic Processes held at School of Mathematical Sciences, National Institute of Science Education and Research during 26 June - 15 July, 2023.
- Delivered an invited talk ‘Stochastic Flows and Associated Stochastic PDEs’ at the Indian Institute of Science, Education and Research Kolkata, India on June 21, 2023.
- Delivered a series of 7 invited lectures on ‘Brownian motion and Stochastic Differential Equations’ at the School of Mathematical Sciences, National Institute of Science Education and Research during 3 - 15 July, 2022.
- Delivered an invited talk ‘On a Class of Stochastic PDEs driven by Levy noise’ at the “International Conference on Dynamical Systems, Control and their Applications” organized at Indian Institute of Technology Roorkee, Roorkee, India during July 1-3, 2022.
- Delivered a series of 3 lectures ‘A Short Introduction to Distribution Theory’ and a lecture ‘A class of Stochastic PDEs in  $S'$  driven by Lévy noise’ at online Workshop on Stochastic Analysis and Hermite Sobolev Spaces during 21–26 June 2021
- ‘Coin Tosses and Divergence of the Harmonic Series’ at the One Day National Webinar on Mathematical Analysis and Probability on October 04, 2020 at the Department of Mathematics (UG & PG), IQAC and J.K. College, Purulia, West Bengal.
- ‘Mild Solutions For Stochastic PDEs in Infinite Dimensions’ at the National Conference on Stochastic Differential Equations and Applications during June 6-7, 2019 at the Department of Mathematics, Indian Institute of Space Science and Technology, Thiruvananthapuram
- ‘Mild Solutions for Stochastic PDEs in infinite dimensions’ at the Fourth International Conference on Statistics for Twenty-first Century-2018 (ICSTC-2018) on December 13, 2018.
- ‘Stochastic PDEs in the space of Tempered distributions’ at Université de Pau et des Pays de l’Adour, France on October 13, 2016
- ‘Stochastic Partial Differential Equations in the space of Tempered distributions’ at TIFR Centre for Applicable Mathematics, Bangalore on June 15, 2015

- ‘Stationary solutions of Stochastic Partial Differential Equations in the space of Tempered distributions’ at Indian Statistical Institute, Bangalore Centre on September 15, 2014 (as a part of Bangalore Probability Seminars)
- ‘Probabilistic representation of solutions of Forward equations’ at Indian Statistical Institute, Bangalore Centre on July 17, 2014

#### **Workshops/Conferences organized:**

- Organized “International Conference on Stochastic Calculus and Applications to Finance” in hybrid mode at IIT Madras, during 3-5 June 2024 with Barun Sarkar (Indian Institute of Technology Madras, India) and Purba Das (King’s College London, UK) (<https://home.iitm.ac.in/barun/spde2024/>).
- Organized an online Workshop on Stochastic Analysis and Hermite Sobolev Spaces during 21–26 June 2021 (Together with Rajeev Bhaskaran (Indian Statistical Institute, Bangalore Centre, India) and Stefan Tappe (Albert Ludwig University of Freiburg, Germany)) (<https://www.stoch-ana-hermite-sobolev.uni-freiburg.de/>)

#### **Workshops/Conferences attended:**

- ‘Jump Processes in Risk Management’ (GIAN course) at IIT Roorkee during December 17-21, 2018.
- ‘Lectures on Probability and Stochastic Processes XIII’ at Indian Statistical Institute, Kolkata Centre during December 7-11, 2018.
- ‘A Probability Meeting’ at Indian Statistical Institute, Bangalore Centre during May 12-14, 2017.
- ‘International IFCAM conference on nonlinear PDEs’ at TIFR Centre for Applicable Mathematics, Bangalore during March 28-29, 2017
- ‘An Afternoon in Stochastic Reflection’ at Indian Statistical Institute, Bangalore Centre on January 23, 2017.
- ‘Advanced Summer School on Hyperbolic Conservation Laws’ at TIFR Centre For Applicable Mathematics, Bangalore during May 16 - June 4, 2016
- ‘Lectures on Probability and Stochastic Processes X’ at Indian Institute of Science, Bangalore during December 13-16, 2015
- ‘Indo-UK Workshop on Stochastic Partial Differential Equations and Applications’ at Indian Institute of Science, Bangalore during December 9-19, 2015
- ‘Lectures on Probability and Stochastic Processes IX’ at Indian Statistical Institute, Kolkata Centre during December 12-16, 2014
- ‘Lectures on Probability and Stochastic Processes VIII’ at Indian Statistical Institute, Bangalore Centre during December 6-10, 2013
- ‘28th Annual Conference of Ramanujan Mathematical Society’ at Reva Institute of Management and Technology, Bangalore during June 27-30, 2013
- ‘New Directions in Probability’ at Indian Statistical Institute, Bangalore Centre during May 30 - June 4, 2013
- ‘Winter School on Stochastic Analysis and Control of Fluid Flow’ at Indian Institute of Science Education and Research, Thiruvananthapuram during December 3-20, 2012
- ‘Lectures on Probability and Stochastic Processes V’ at Indian Statistical Institute, Bangalore Centre during December 23-27, 2010
- ‘Summer School on Probability: Foundations & Applications’ at Kerala School of Mathematics, Kozhikode during May 17 - June 4, 2010

#### **Additional information:**

- Familiarity with mathematical computing softwares e.g. SAGE (<http://sagemath.org/>) and in programming languages e.g. C