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Aritra Bhowmick

Employment

July 2025 –
Present
Visiting Assistant Professor, *Kerala School of Mathematics*, Kozhikode

May 2024 –
July 2025
NBHM Postdoctoral Fellow, *Indian Institute of Science*, Bangalore
Mentor: Prof. Ved Datar

April 2023 –
May 2024
NBHM Postdoctoral Fellow, *Indian Institute of Science Education and Research, Kolkata*
Mentor: Prof. Somnath Basu

February 2022 –
March 2023
IISER-K Postdoctoral Fellow, *Indian Institute of Science Education and Research, Kolkata*
Mentor: Prof. Somnath Basu

Education

June 2015 –
January 2022
Ph.D. in Mathematics, *Indian Statistical Institute, Kolkata*
Thesis: Horizontal, Contact and Partially Horizontal Immersions in Fat Distributions
Supervisor: Prof. Mahuya Datta, *Submitted:* June 2021, *Defended:* May 2022

2013 – 2015 **M.Sc. in Mathematics**, *Indian Institute of Technology, Kanpur*

2010 – 2013 **B.Sc. in Mathematics**, *Jadavpur University, Kolkata*

Publications

- **Aritra Bhowmick**, Jin-ichi Itoh, Sachchidanand Prasad. *Hausdorff Stability of the Cut Locus Under C^2-Perturbations of the Metric.* arXiv:2503.19413
  Journal of Mathematical Analysis and Applications, Vol 557, No. 2 (2026)
  DOI: 10.1016/j.jmaa.2025.130324

- Somnath Basu, **Aritra Bhowmick**, Sandip Samanta. *On the James brace product: Generalization, relation to H-splitting of loop space fibrations & the J-homomorphism.* arXiv:2401.16206
  To appear in: Indiana University Mathematics Journal

- **Aritra Bhowmick**, Sachchidanand Prasad. *On the Cut Locus of Submanifolds of a Finsler Manifold.* arXiv:2307.11045
  Journal of Geometric Analysis, Vol 34, No. 308 (2024)
  DOI: 10.1007/s12220-024-01751-1

- **Aritra Bhowmick**. *The h-principle for maps transverse to bracket-generating distributions.* arXiv:2205.04323
  Pacific Journal of Mathematics, Vol. 330 (2024), No. 2, 207–231
  DOI: 10.2140/pjm.2024.330.207
- **Aritra Bhowmick**, Mahuya Datta. *Existence of Horizontal Immersions in Fat Distributions.* arXiv:2007.02058
  International Journal of Mathematics, Vol. 34, No. 10, 2350056 (2023)
  DOI: 10.1142/S0129167X23500568
- **Aritra Bhowmick**. *On Horizontal Immersions of Discs in Fat Distributions of Type $(4, 6)$.* arXiv:2003.06565
  Journal of Topology and Analysis, Vol. 16, No. 1, pp. 125-153 (2021)
  DOI:10.1142/S1793525321500539
- **Aritra Bhowmick**. *Stability of certain Engel-like distributions.* arXiv:1808.07714
  Czechoslovak Mathematical Journal, Vol. 71, No. 3, pp. 765-784, (2021)
  DOI:10.21136/CMJ.2020.0093-20

Preprints & Manuscripts in Preparation

- **Aritra Bhowmick**, Sachchidanand Prasad, Thomas Schick. *Intersection of the Cut and Focal Loci of a Submanifold.* (in preparation)
- **Aritra Bhowmick**, Sachchidanand Prasad. *Distance from a Finsler Submanifold to its Cut Locus and the Existence of a Tubular Neighborhood.* arXiv:2411.01185 (communicated)
- **Aritra Bhowmick**, Sachchidanand Prasad. *On the Focal Locus of Submanifolds of a Finsler Manifold.* arXiv:2409.02643 (communicated)

Research Interests

- Differential geometry: cut locus in (sub)Riemannian, Finslerian and Lorentzian geometry; h-principle of distributions; symplectic and contact geometry
- Algebraic topology: higher homotopy invariants; homotopy type of loop spaces; splitting of fibrations with a section

Teaching Experiences

2025	Instructor for the Topology course in the Integrated MSc-PhD program at KSoM
2023	Tutor in AIS Hochschild Homology, held at IISER Kolkata
2023	TA for Prof. Anandamohan Ghosh for the course MA1202 at IISER Kolkata
2022	TA for Prof. Amit Ghosal for the course MA2103 at IISER Kolkata
2019	Tutor in AIS Homotopy Theory, held at ISI Kolkata
2019	TA for Prof. Samik Basu in Algebraic Topology course for M.Math at ISI Kolkata
2017	Tutor in AIS h-Principle, held at ISI Kolkata

Invited Talks

2024	Fibration with a Section and H-Splitting of the Looped Total Space at International Conference on Differential Geometry and Topology

2024   h-Principle for Maps Transverse to Bracket-Generating Distributions at Knots, Graphs, and Groups online seminar

2024   Cut Locus in Finsler Geometry at Bengal Topology Circle Meeting, IISER Kolkata

2023   Fibration with a Section and H-Splitting of the Looped Total Space at 38th Annual Conference of RMS, IIT Guwahati

2023   *h-Principle for Horizontal and Transverse Immersions* at Bengal Topology Circle 2023, TCG CREST

2022   *h-Principle and the Immersion Theory* at IINMM 2022, IISER kolkata

Contributed Talks

2024   *Cut Locus of a Submanifold of a Finsler Manifold* at IINMM 2024, IISER Thiruvananthapuram

2023   *h-Principle for transverse maps* at IISER Kolkata DMS In-House Symposium

2019   *Bracket Generating Distributions and Horizontal Curves* at ISI Kolkata Graduate Seminar

2018   *Some Distribution on Manifolds and their Properties* at ISI Kolkata Graduate Seminar

2018   *The Rigidity Problem for Stable Spaces* at ISI Kolkata Topology Seminar

2018   *Realization problem for the group of self-homotopy equivalences* at ISI Kolkata Topology Seminar

2017   *h-Principle and its application* at ISI Kolkata Graduate Seminar

2015   *Nielsen-Schreier Theorem* at ISI Kolkata Graduate Seminar

Seminars and Workshops Attended

2025   NCMW: Recent advances in stable homotopical computations at IIT Roorkee

2024   Discussion Meeting on Zero Mean Curvature Surfaces at ICTS Bangalore

2024   Inter IISER-NISER Mathematics Meet at IISER Thiruvananthapuram

2024   Begnal Topology Circle Meeting at IISER Kolkata

2023   Dualities in Topology and Algebra at ICTS Bangalore

2023   DMS In-House Symposium at IISER Kolkata

2023   Bengal Topology Circle Meeting at TCG CREST

2022   Inter IISER-NISER Mathematics Meet at IISER Kolkata

2019   Topology of manifolds and Representation theory at ISI Kolkata

2019   AIS Homotopy Theory at ISI Kolkata

2018   Young Topologists' Meet at CMI

2018   NCMW Contact and Symplectic Geometry at IISER Bhopal

2017   AIS h-Principle at ISI Kolkata

2017   Differential Geometry and PDEs at IIT Kanpur

2017   ATMW Differential Geometry at IISER Pune

2016   ATMW Algebraic Structures on Manifolds at ISI Kolkata

2016   AIS Algebraic Topology at NEHU Shillong

2016   AIS Differential Geometry at IIT Bombay

Academic Visits

December 2019   Visited Prof. Adi Adimurthi at TIFR CAM, Bangalore for a week.

December 2018   Visited Prof. Dheeraj Kulkarni at IISER Bhopal for 2 weeks.

Honors and Awards

2015   **Shailja Srivastava Award** for the meritorious non-doctoral student entering in final year in Mathematics and Scientific Computing.

2015   **General Proficiency Medal** for the best academic performance in the MSc Programme in Mathematics

2010 – 2015   **INSPIRE Scholarship for Higher Education** during B.Sc and M.Sc.

Computer Skills

- LaTeX, typst, Jupyter
- Python, JavaScript, C/C++, C#

References

Prof. Mahuya Datta   Professor, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Kolkata, India. mahuya.isi@gmail.com

Dr. Somnath Basu   Associate Professor, Department of Mathematics and Statistics, Indian Institute of Science Education and Research, Kolkata. somnath.basu@iiserkol.ac.in

Prof. Thomas Schick   Professor, Mathematisches Institut, Universität Göttingen, Göttingen, Germany. thomas.schick@math.uni-goettingen.de

Prof. Jin-ichi Itoh   Professor, School of Education, Sugiyama Jogakuen University, Nagoya, Japan. j-itoh@sugiyama-u.ac.jp

Dr. Samik Basu   Associate Professor, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Kolkata, India. samikbasu@isical.ac.in