SACHCHIDANAND PRASAD

Personal Data

Place and Date of Birth:	Birpur, India | 22 July 1994
Address:	G108, ICTS, Survey No. 151, Shivakote
	Bangalore, PIN- 560089, Karnataka, India
Phone:	+91 9556038763/ +91-8967839136
email:	sachchidanand.prasad@icts.res.in
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Employment

Jan-2023 - Current	Postdoctoral Fellow
	Supervisor: Prof. Rukmini Dey
	International Centre for Theoretical Sciences (ICTS) Banglaroe

Education

July 2017 - Dec-2022	Doctor of Philosophy (Ph.D.)
	Supervisor: Dr. Somnath Basu
	Indian Institute Science Education and Research, Kolkata, India
	Thesis: *Cut Locus of Submanifolds: A Geometric and Topological Viewpoint*
	Defence date: 28 December 2022
July 2012 - May 2017	5 Year Integrated M.Sc. in Mathematics
	National Institute of Technology, Rourkela, India
	Major: Mathematics
	CGPA: 9.17/10
	Thesis: *Differentiability of Convex Functions on a Banach Space and their Properties*

Research Interests

➔ Differential Geometry (Cut locus of submanifolds)

➔ Differential Topology

➔ Algebraic Topology

➔ Combinatorial Topology (Independence complex)

➔ Image of Polynomial Maps over non-commutative variable

➔ Algebraic Graph Theory

Publications & Preprints

✎ *On the cut locus of submanifolds of a Finsler manifold* (joint with A. Bhowmick), July 2023,
https://arxiv.org/abs/2307.11045

✎ *Independence complexes of wedge of graphs* (joint with N. Daundkar and S. Panja), March 2023,
https://arxiv.org/abs/2303.08798 (Communicated)

✎ *The image of polynomials and Waring type problems on upper triangular matrix algebras* (joint with S. Panja), June 2022,
https://arxiv.org/abs/2206.08827
Journal of Algebra(Volume 631, October 2023, Pages 148-193)

✎ *Counterexample to a conjecture about dihedral quandle* (joint with S.Panja), May 2022,
https://arxiv.org/abs/2205.15024 (Accepted, to appear in Miskolc Mathematical Notes)

✎ *A connection between cut locus, Thom space and Morse-Bott functions* (joint with S. Basu), June 2021, https://arxiv.org/abs/2011.02972 (Accepted, to appear in **Algebraic & Geometric Topology**)

ONGOING WORK

1. *Equivariant cut locus theorem and application to classifying spaces* (with S. Basu)
2. *Hausdorff dimension of cut locus of submanifolds*
3. *Independence complex of grid grpahs* (with S. Panja)
4. *Stability of cut locus of submanifolds* (with J. Itoh)

HONOURS & AWARDS

Jan, 2018 | Gold Medal
Awarded the Gold medal for the Best Postgraduate (Integrated M.Sc) .

Jan, 2018 | Gold Medal
Awarded the medal for first position in Mathematics in Integarted M.Sc.

2016-17 | NBHM Fellowship for Masters
Got National Borad of Mathematics (NBHM) M.Sc. fellowship.

DEC 2010 | Mathematics Olympiad
Got 1st rank in the Regional Mathematics Olympiad from Patna region and later got selected for the Indian National Mathematics Olympiad.

TRAINING PROGRAMMES AND CONFERENCES ATTENDED

Dec 06-08, 2022 | The 37th Annual Conference of Ramanujan Mathematical Society, SSN College of Engineering, Chennai, India

Nov 24-26, 2022 | Operator Theory and Complex Geometry, IISER Kolkata, West Bengal, India

June 06-08, 2022 | The 39th Annual Workshop in Geometric Topology (Online)

May 31-June 02, 2022 | Inter IISER-NISER Mathematics Meet, 2022, IISER Kolkata

July 05-16, 2021 | Young's Topologists Meet, 2021 (online), KTH Royal Institute of Technology and Stockholm University

June 17-18, 2021 | Top Flavours, 2021 (online), University of Warwick

Nov 18-30, 2019 | Sheaf Theory, Sheaf Cohomology and Spectral Sequences, University of Delhi

July 08-20, 2019 | Advanced Instructional School on Riemannian Geometry, IISc Bengaluru

May 13-25, 2019 | Advanced Instructional School on Homotopy Theory, ISI Kolkata

Dec 03-14, 2018 | Advanced Instructional School on Contact and Symplectic Topology, IISER Bhopal

July 10-22, 2017 | J-holomorphic Curves and G-W Invariants at NISER Bhubenswar

June-July, 2016 | Summer Program in Mathematics (SPIM)

2013,14,15,16 | Mathematics Training and Talent Search (MTTS)

INVITED TALKS

- "Cut Locus of Submanifolds: A Geometric Viewpoint", GANIT Seminar, 2022, IIT Gandhinagar
- "Equivariant Cut Locus Theorem", Inter IISER-NISER Math Meet, 2022, IISER Kolkata
- "Cut locus, Morse-Bott Functions and their relation", Inter IISER-NISER Math Meet, 2021, IISER Tirupati
- "Introduction and advanced stuffs in Geogebra", Introductory workshops on GeoGebra (Hindi), 2021, Online
- "Real Analysis and its Application", Department of Mathematics, Arts, Commerce & Science College, Maregaon, Online
- "Extension of Diffeomorphisms of a Circle to the Closed Disk", National Institute of Technology, Rourkela

CONTRIBUTED TALKS

- "Independence Complex of Wedge of Graphs", ICTS Bengaluru, In-House 2023
- "Cut Locus of Submanifolds: A Geometric and Topological Viewpoint", International Centre for Theoretical Sciences (ICTS), Bengaluru, 2022, Online
- "Morse-Bott Flows and Cut Locus of Submanifolds", The 39$^{\text{th}}$ Workshop in Geometric Topology, 2022, Online
- "Morse-Bott functions, Cut locus and their relations", Young Topologists and Geometers, DMV-ÖMG annual meeting 2021, Universität Passau
- "Cut Locus and Morse-Bott Functions", Contributed Talk, Top Flavors-2021, University of Warwick
- "Sphere Eversion", Gong-Show Talk, Top Flavors-2021, University of Warwick
- "Extension of Diffeomorphisms of a Circle to the Closed Disk", Advanced Instructional School on Homotopy Theory, ISI Kolkata
- "Orientation Preserving Diffeomorphisms of S^1 is path connected", Graduate Student Seminar, IISER Kolkata, Autumn 2018
- "Convex Functions on a Real Banach Space", Graduate Student Seminar, IISER Kolkata, Spring 2018
- "The inverse and implicit function theorems", Graduate Student Seminar, IISER Kolkata, Autumn 2017
- "Infintely Many Proofs for Infinitude of Primes", Student Seminar, National Institute of Technology, Rourkela, 2017
- "Riemann Mapping Theorem: Levi's Method", Indian Statistical Institute, Chennai, 2016
- "Irrationality of π", National Institute of Technology, Rourkela, 2016
- "An Approach to Divisibility", National Institute of Technology, Rourkela, 2015

SERVICES

- Volunteer at Math Spark, ICTS
- Facilitator at ICTS RRI Maths Circle
- Organizer for the Curry Leaf Days, 2021 and 2022
- Organizer for the Graduate Student Seminar IISER Kolkata
- An organizing member of Curry Leaf: A math club of MTTS alumni

Teaching Assistant

MTTS, Level-0	Mentor at the MTTS camp, IIT(ISM) Dhanbad, 2023
OFCM	Online Foundation Course in Mathematics, MTTS, 2022
Several Variable Calculus	Online Foundation Course in Mathematics, MTTS, 2021
Topology	3rd year undergraduate, IISER Kolkata (Jan 2021- April 2021)
OFCM	Online Foundation Course in Mathematics, MTTS, 2020
Linear Algebra	2nd year undergraduate, IISER Kolkata (Aug 2020- Dec 2020)
Algebra I	3rd year undergraduate, IISER Kolkata (Aug 2019- Nov 2019)
Analysis II	2nd year undergraduate, IISER Kolkata (Jan 2019- May 2019)
Analysis I	2nd year undergraduate, IISER Kolkata (Aug 2018- Nov 2018)
Probability and Statistics	2nd year undergraduate, IISER Kolkata (Jan 2018- May 2018)
Measure Theory	1st year Masters, NIT Rourkela (Jan 2017- May 2017)
Real Analysis II	1st year Masters, NIT Rourkela (July 2016- November 2016)

Computer Skills

Programming Languages:	C/C++, matlab, JavaScript, Mathematica, sage, python
Basic Knowledge:	php, CSS, Excel, Linux, gimp, django
Intermediate Knowledge:	html, Word, Geogebra, PowerPoint, ipe, Inkscape, LaTeX

References

Dr. Somnath Basu	Associate Professor, Department of Mathematics and Statistics, IISER Kolkata somnath.basu@iiserkol.ac.in
Dr. Sushil Gorai	Associate Professor, Department of Mathematics and Statistics, IISER Kolkata sushil.gorai@iiserkol.ac.in
Prof. Mahuya Datta	Professor, Theoretical Statistics and Mathematics Unit Indian Statistical Institute mahuya@isical.ac.in

Declaration

I hereby declare that all the statements made herein true to my best of knowledge and belief.

Place: Kolkata

Sachchidanand Prasad