

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
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EMPLOYMENT

JAN-2023 - CURRENT Postdoctoral Fellow
SUPERVISOR: Prof. Rukmini Dey
International Centre for Theoretical Sciences (ICTS) Bangalore

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

PUBLICATIONS & PREPRINTS

- 📄 *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> (Accepted, to appear in **Journal of Algebra**)
- 📄 *Counterexample to a conjecture about dihedral quandle* (joint with S. Panja), May 2022,
<https://arxiv.org/abs/2205.15024> (Communicated)
- 📄 *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 graphs* (with S. Panja)
4. *Cut locus in Finsler manifolds* (with A. Bhowmick)
5. *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 Integrated M.Sc.

2016-17 **NBHM Fellowship for Masters**
Got National Board 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 39th 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
- “Infinitely 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

- 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

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 I	2nd year undergraduate, IISER Kolkata (Jan 2019- May 2019)
ANALYSIS II	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