

SACHCHIDANAND PRASAD

PERSONAL DATA

PLACE AND DATE OF BIRTH: Birpur, India | 22 July 1994
ADDRESS: A-019 Nivedita Hall of Residence IISER Kolkata
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EDUCATION

JULY 2017 - OCT-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*

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

- 📄 *The image of polynomials on upper triangular matrix algebras* (joint with Saikat Panja), June 2022,
<https://arxiv.org/abs/2206.08827> (Communicated)
- 📄 *Counterexample to a conjecture about dihedral quandle* (joint with Saikat Panja), May 2022,
<https://arxiv.org/abs/2205.15024> (Communicated)
- 📄 *A connection between cut locus, Thom space and Morse-Bott functions* (joint with Somnath 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 Dr Somnath Basu)
2. *Hausdorff dimesnion of cut locus of submanifolds*
3. *Independence complex of grid grpahs* (with Saikat Panja)

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 1 st 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”, IIT Gandhinagar, 2022
- “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

- “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 Flavours-2021, University of Warwick](#)
- “Sphere Eversion”, Gong-Show Talk, [Top Flavours-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

- Organizer for the [Curry Leaf Days, 2021](#)
- 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 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