

# SACHCHIDANAND PRASAD

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: Birpur, India | 22 July 1994  
ADDRESS (O): 427-2, School of Mathematics, Jilin University  
Qianwei Street 2699, Changchun City, Jilin Province, China  
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PERSONAL HOMEPAGE: <https://prasadsachchidanand.github.io/>

## EMPLOYMENT

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27 MARCH 2024 - CONTINUE Jilin-Göttingen joint Postdoctoral Fellow  
Jilin University, China and Göttingen University, Germany  
8 JAN 2023 - 25 MARCH 2024 Postdoctoral Fellow  
SUPERVISOR: [Prof. Rukmini Dey](#)  
International Centre for Theoretical Sciences (ICTS) Bangalore

## ACADEMIC VISIT

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04 SEP - 25 SEP, 2023 University of Patras, Greece,  
26 SEP - 30 SEP, 2023 Shiv Nadar University, India  
15 NOV, 2023 - 04 JAN, 2024 Nagoya University, Japan

## EDUCATION

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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*  
SUPERVISOR: [Dr. Debajyoti Choudhuri](#)



## RESEARCH INTERESTS

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- Differential Geometry (Cut locus of submanifolds)
- Differential Topology
- Algebraic Topology
- Combinatorial Topology (Independence complex)
- Image of Polynomial Maps over non-commutative variable
- Zero Divisor Graphs

## PUBLICATIONS & PREPRINTS

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-  *Six problems in Intuitive Geometry* (joint with Honda, Horio, Itoh, and Nomura), January 2024, [Bulletin Mathématique de la Société des Sciences Mathématiques de Roumanie](#) (Tome 67 (115), No. 2, April 2024, Pages 223-229)
-  *On the cut locus of submanifolds of a Finsler manifold* (joint with A. Bhowmick), July 2023, <https://arxiv.org/abs/2307.11045> (communicated)

- ✍ *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>  
*Miskolc Mathematical Notes* (Volume 25, January 2023, No. 1, Pages 425-428)
- ✍ *A connection between cut locus, Thom space and Morse-Bott functions* (joint with S. Basu), June 2021, <https://arxiv.org/abs/2011.02972> *Algebraic & Geometric Topology* (Volume 23, November 2023, Pages 4185-4233)

## ONGOING WORK

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1. *Equivariant cut locus theorem and application to classifying spaces* (with S. Basu)
2. *Manifolds homomorphic to  $n$ -sphere* (with S. Basu)
3. *Different dimensions of cut locus of submanifolds* (with A. Bhawmick)
4. *Space-time cut locus* (with I. Biswas and P. Kumar)
5. *Graph Cut Loci* (with J. Itoh)
6. *Zero divisor graph of finitely many products of fields* (with K. Samant)

## HONOURS & AWARDS

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March 2024 - March, 2027	High Level Foreign Talent, Govt. of China
Nov - Dec, 2023	Funding from the Nagoya University and Sugiyama Jagakuen University For collaboration with Prof. Jin-ichi Itoh.
Sep, 2023	Infosys Excellence Travel grant Got the Infosys Excellence Travel grant from the Director of ICTS-TIFR to travel Greece.
Jan, 2018	<b>Gold Medal</b> Awarded the Gold medal for the Best Postgraduate (Integrated M.Sc) .
Jan, 2018	<b>Gold Medal</b> Awarded the medal for first position in Mathematics in Integrated M.Sc.
2016-17	<b>NBHM Fellowship for Masters</b> Got National Board of Mathematics (NBHM) M.Sc. fellowship.
DEC 2010	<b>Mathematics Olympiad</b> Got 1 <sup>st</sup> rank in the Regional Mathematics Olympiad from Patna region and later got selected for the Indian National Mathematics Olympiad.

## TRAINING PROGRAMMES AND CONFERENCES ATTENDED

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Jan 04 - 06, 2024	Geodesics and related topics, Kumamoto University, Kumamoto, Japan
Sep 08-11, 2023	<b>The 7th Meeting of ICDG, 2023, University of Patras, Greece</b>
May 15-26, 2023	<b>Dualities in Topology and Algebra, ICTS-TIFR, Bengaluru, India</b>
Dec 06-08, 2022	<b>The 37th Annual Conference of Ramanujan Mathematical Society, SSN College of Engineering, Chennai, India</b>

Nov 24-26, 2022	<a href="#">Operator Theory and Complex Geometry, IISER Kolkata, West Bengal, India</a>
June 06-08, 2022	<a href="#">The 39th Annual Workshop in Geometric Topology (Online)</a>
May 31-June 02, 2022	<a href="#">Inter IISER-NISER Mathematics Meet, 2022, IISER Kolkata</a>
July 05-16, 2021	<a href="#">Young's Topologists Meet, 2021 (online), KTH Royal Institute of Technology and Stockholm University</a>
June 17-18, 2021	<a href="#">Top Flavours, 2021 (online), University of Warwick</a>
Nov 18-30, 2019	<a href="#">Sheaf Theory, Sheaf Cohomology and Spectral Sequences, University of Delhi</a>
July 08-20, 2019	<a href="#">Advanced Instructional School on Riemannian Geometry, IISc Bengaluru</a>
May 13-25, 2019	<a href="#">Advanced Instructional School on Homotopy Theory, ISI Kolkata</a>
Dec 03-14, 2018	<a href="#">Advanced Instructional School on Contact and Symplectic Topology, IISER Bhopal</a>
July 10-22, 2017	<a href="#">J-holomorphic Curves and G-W Invariants at NISER Bhubenswar</a>
June-July, 2016	<a href="#">Summer Program in Mathematics (SPIM)</a>
2013,14,15,16	<a href="#">Mathematics Training and Talent Search (MTTS)</a>

## INVITED TALKS

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- “Cut Locus of Submanifolds: A Geometric Property of the Manifold”, Meeting on Knots, graphs and groups, April 2024, Online,
- “On Manifold Homeomorphic to  $d$ -sphere”, Geodesics and related topics, Jan 2024, Kumamoto University, Japan
- “Cut Locus of Submanifolds: A Geometric Property of the Manifold”, Dec 2023, Geometry and Topology Seminar, Nagoya University, Japan
- “On Manifold Homeomorphic to  $d$ -sphere”, [ICDG 2023](#), University of Patras, Greece
- “A Tour of the Cut Locus”, Mathematical Society of the SNU, 2023, Shiv Nadar University,
- “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

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- “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<sup>th</sup> 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  $\pi$ ”, National Institute of Technology, Rourkela, 2016
- “An Approach to Divisibility”, National Institute of Technology, Rourkela, 2015

## SERVICES

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- 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

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OFCM	Online Foundation Course in Mathematics, MTTS, 2023
MTTS, LEVEL-O	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)

## TEACHING

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<a href="#">Introduction to Symplectic geomtry</a>	Jilin University, China (Ongoing)
Init Math MTTS (Number Theory)	6 Days MTTS program at IIT-ISM Dhanbad
MTTS Overture (Real Analysis)	2 Days MTTS program at Patna Women’s College
<a href="#">Svadhyaya 1.2</a>	One week lecture on quotient topology organized by curry leaf

## COMPUTER SKILLS

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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

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DR. SOMNATH BASU	Associate Professor, Department of Mathematics and Statistics, IISER Kolkata <a href="mailto:somnath.basu@iiserkol.ac.in">somnath.basu@iiserkol.ac.in</a>
PROF. MAHUYA DATTA	Professor, Theoretical Statistics and Mathematics Unit Indian Statistical Institute <a href="mailto:mahuya@isical.ac.in">mahuya@isical.ac.in</a>
PROF. RUKMINI DEY	Professor, International Centre for Theoretical Sciences, Bangalore <a href="mailto:rukmini@icts.res.in">rukmini@icts.res.in</a>
PROF. JIN-ICHI ITOH	Professor, School of Education, Sugiyama Jogakuen University, Nagoya <a href="mailto:j-itoh@sugiyama-u.ac.jp">j-itoh@sugiyama-u.ac.jp</a>

## DECLARATION

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

Place: Kolkata

Sachchidanand Prasad