

Sumanta Das

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Education

Indian Institute of Science

Ph.D., Mathematics, August 2019 - Present.
Thesis Advisor: Siddhartha Gadgil.

Indian Statistical Institute

M. Math, June 2017 - May 2019.
Project Advisor: Aniruddha C. Naolekar.

Ramakrishna Mission Vidyamandira

B.Sc Mathematics, 2014 - 2017.
Minors in Statistics and Computer Science.

Research Interests

Geometric topology:

- Non-zero degree (proper) maps between two (non-compact) surfaces or two (non-compact) 3-manifolds,
- Mapping class groups of finite and infinite type surfaces.
- The Goldman Lie algebra.
- Hopfian manifolds.
- Domination of manifolds.

Algebraic Topology:

- Lusternik-Schnirelmann invariants (in proper homotopy theory).

Papers

Accepted:

- Strong topological rigidity of non-compact orientable surfaces, arXiv:2111.11194v3. 2023. To appear in Algebraic and Geometric Topology.
- Surfaces of infinite-type are non-Hopfian, with S. Gadgil. arXiv:2210.03395v2. 2023. To appear in Comptes Rendus Mathématique.

Submitted:

- The Goldman bracket characterizes homeomorphisms between non-compact surfaces, with S. Gadgil and A. K. Nair, 2023. arXiv:2307.02769v1.

In preparation:

- Degree one domination of non-compact surfaces, 2023.
- The center of the Goldman Lie algebra of an infinite type surface, 2023.

Presentations

Invited Talks:

- 11th Sep 2023. Strong topological rigidity of non-compact orientable surfaces. Prospectos en Topología, CCM UNAM, México.
- 10th Feb 2023. Surfaces of infinite type are non-Hopfian. Geometry & Topology Seminars (GaTs), IISER Bhopal.

Contributed Talks:

- 31st Jan 2023. The Lusternik-Schnirelmann category. Prime Time Seminars, Department of Mathematics, IISc.
- 24th Nov 2022. Strong topological rigidity of non-compact orientable surfaces. Postdoc-Student Symposium, Department of Mathematics, IISc.

Teaching Assistance

- Introduction to Algebraic Topology (MA232), IISc, Bangalore:
Oct 2020 - Jan 2021, Instructor - Siddhartha Gadgil.
Aug 2021 - Dec 2021, Instructor - Basudeb Datta.
Aug 2022 - Dec 2022, Instructor - Harish Seshadri.
- Dec 2022, Annual Foundation School - I, Mepco Schlenk Engineering College, Sivakasi, Instructor - HA Gururaja.

Awards & Fellowships

- National Board of Higher Mathematics M.A./M.Sc. Scholarship, 2018.
- National Board of Higher Mathematics Ph.D. Scholarship, 2019.
- CSIR National Eligibility Test, 2019, Junior Research Fellowship, Rank 23.

Service

I am a co-organizer of Students' Topology & Geometry Seminars. Also, I developed and currently maintain its website: <https://stgsiisc.github.io/>.

Conferences

- Sep 2023, Low-Dimensional Topology at IISER Pune.
- May 2023, 1, 2, 3: Curves, Surfaces, and 3-Manifolds at Technion-Israel Institute of Technology.
- July 2021, Tech Topology Summer school at Georgia Institute of Technology (virtual).