

## Abhishek Mallick

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CONTACT INFORMATION	Rutgers University, New Brunswick Hill Center, Busch Campus, 110 Frelinghuysen Road Piscataway, NJ 08854, USA. Email: <a href="mailto:abhishek.mallick@rutgers.edu">abhishek.mallick@rutgers.edu</a>
RESEARCH INTERESTS	Low dimensional topology. Floer homology. Equivariant Floer homology. Khovanov homology.
EMPLOYMENT	<b>Rutgers University, New Brunswick</b> Hill Assistant Professor, 2023 Spring-2025 Summer. <b>Mathematical Sciences Research Institute (SLMath), Berkeley</b> Postdoctoral Fellow Fall, 2022 <b>Max-Planck-Institut für Mathematik, Bonn</b> Postdoctoral Research Fellow 2021-22
EDUCATION	<b>Michigan State University</b> Ph.D. Mathematics 2021 • Advisor: Matthew Hedden <b>Ramakrishna Mission Vivekananda Educational and Research Institute, India</b> M.Sc. in Mathematics, 2015
PUBLICATIONS	Gompf's cork and Heegaard Floer homology <i>arXiv preprint</i> (with Dai, and Zemke). Involutions and the Chern–Simons filtration in instanton Floer homology <i>arXiv preprint</i> (with Alfieri, Dai, and Taniguchi). Exotic Dehn twists on 4-manifolds <i>arXiv preprint</i> (with Konno, and Taniguchi). From diffeomorphisms to exotic phenomena in small 4-manifolds <i>arXiv preprint</i> (with Konno, and Taniguchi). Rank-expanding satellites, Whitehead doubles, and Heegaard Floer homology <i>arXiv preprint</i> (with Dai, Hedden and Stoffregen). The (2,1)-cable of the figure-eight knot is not smoothly slice <i>arXiv preprint</i> (with Dai, Kang, Park and Stoffregen). Knot Floer homology and surgery on equivariant knots <i>arXiv preprint</i> . Equivariant knots and knot Floer homology. To appear in the <i>Journal of Topology</i> (with Dai and Stoffregen).

INVITED  
TALKS

Corks, Involutions, and Heegaard Floer Homology. To appear in the *Journal of the European Mathematical Society*, (with Dai and Hedden).

*Institute of Mathematics of the Polish Academy of Sciences, Simons Semester-Knots, Homologies and Physics, 2024*

*University of British Columbia, Topology seminar, 2024*

*MIT, Geometry and Topology seminar, 2024*

*Gauge theory learning seminar, Rutgers University, 2024*

*UCLA, 2024 Geometry and Topology Workshop UCLA, 2024*

*Stony Brook University, Symplectic Geometry, Gauge Theory and Low-Dimensional Topology seminar, 2023*

*Columbia University, Geometric Topology seminar, 2023*

*University of Virginia, New Developments in 3- and 4-Manifold Topology, 2023.*

*University of Georgia, Geometry and Topology seminar, 2023.*

*Log Cabin Conference on Concordance and Knotted Surfaces, Arizona, 2023.*

*Rutgers University - New Brunswick, Geometry and Topology seminar, 2023.*

*Oberwolfach Workshop: Morphism in Low-dimensional topology, 2023 (unable to attend)*

*MIT, Geometry and Topology seminar, 2022.*

*Stanford University, Topology seminar, 2022.*

*MSRI, Berkeley, Floer homotopy theory program seminar, 2022.*

*Princeton University, Topology seminar, 2022.*

*IBS Center for Geometry and Physics, CGP seminar, 2022.*

*Max Planck Institute for Mathematics, Surfaces in 4-manifolds, 2022.*

*American Institute of Mathematics, Program on 4-manifolds, virtual, 2021.*

*American Mathematical Society, special session on the Topology and Geometry of 3- and 4-manifolds, at the AMS Southeastern Sectional Meeting, virtually at Georgia Tech 2021.*

*Joint Mathematics Meetings: AMS Special Session on Low Dimensional Topology, I (Associated with AMS Invited Maryam Mirzakhani Lecture), virtual conference, 2021.*

*Nearly Carbon Neutral Geometry Topology Conference, mini-session on 4-manifolds, virtual conference, 2020.*

*American Mathematical Society, Sectional Meeting; Special Session on Low-dimensional Topology*, Purdue University (canceled), 2020.

*University of Virginia, Geometry Seminar*, 2020.

*Graduate Student Topology and Geometry Conference*, Indiana University Bloomington (postponed), 2020.

HONORS AND  
AWARDS

2010–2015 Jagadis Bose National Science Talent Search Scholarship.  
2010–2015 Innovation in Science Pursuit for Inspired Research Fellowship, Department of Science and Technology, Govt.of India.  
2016 Paul and Wilma Dressel Endowed Scholarship, MSU.  
2016 College of Natural Science Dissertation Continuing Fellowship, MSU.  
2018 Paul and Wilma Dressel Endowed Scholarship, MSU.  
2020 Douglas A. Spragg Endowed Fellowship in Mathematics, MSU.  
2020 College of Natural Science Dissertation completion Fellowship, MSU.

TEACHING

Spring 2024 Primary Instructor, *Topics in Topology*, Graduate topics course in Floer homology  
Fall 2023 Primary Instructor, two sections of Calculus I-(Differentiation and Integration)  
Spring 2023 Primary Instructor, two sections of Calculus I-(Differentiation and Integration)  
Summer 2016 Lecturer, Calculus II (Integration, Series, Sequence)  
Fall 2016 Lecturer, Calculus II (Integration, Series, Sequence)  
Spring 2017 Lecturer, Calculus IV (Differential Equation)  
Summer 2017 Lecturer, Calculus IV (Differential Equation)  
Fall 2017 Teaching Assistant, Transition to Proofs  
Spring 2018 Teaching Assistant, Calculus III (Multivariable Calculus)  
Fall 2018 Teaching Assistant, Calculus III (Multivariable Calculus)  
Spring 2019 Grader, Graduate course on Algebraic Topology  
Summer 2019 Lecturer, College Algebra  
Fall 2019 Teaching Assistant, Calculus III (Multivariable Calculus)  
Spring 2020 Teaching Assistant, Calculus III (Multivariable Calculus)

UNDERGRADUATE  
STUDENT  
SUPERVISION

Jay Patwardhan - Rutgers University (REU), Zheheng Xiao - Columbia University (REU)

PROFESSIONAL  
SERVICE

Referee for *Geometry & Topology*, *Advances in Mathematics*, *Journal of Topology*, *Algebraic & Geometric Topology*.

Mentor for an REU project (Rutgers University, Summer 2023) on the topic *Generalized*

*Mazur pattern and Bordered Heegaard Floer homology*

ORGANIZATION

*Co-organized Rutgers DIMACS REU, Summer 2023*

*Co-organized Postdoctoral Research Seminar on Floer homotopy theory, MSRI-SLMath, 2022*

*Nearly Carbon Neutral Geometry Topology Conference, co-organized a mini-session, virtual conference, 2021.*

*Weekly Departmental student Geometry and Topology seminar, MSU, 2017-2018.*

*Co-organized Graduate Student Topology and Geometry Conference, MSU, 2017.*

OUTREACH

Mentor for a non-profit organization, *Padakshep*, based in India, which supports under-privileged meritorious school students with financial assistance and academic guidance.

Helped Quanta Magazine prepare a popular science article on one of my research work.