

Abhishek Mallick

CONTACT INFORMATION	<p>Rutgers University, New Brunswick</p> <p>Hill Center, Busch Campus, 110 Frelinghuysen Road Piscataway, NJ 08854, USA.</p> <p>Email: abhishek.mallick@rutgers.edu</p>
RESEARCH INTERESTS	<p>Low dimensional topology. Floer homology. Equivariant Floer homology. Khovanov homology.</p>
EMPLOYMENT	<p>Rutgers University, New Brunswick</p> <p>Hill Assistant Professor, 2023 Spring-2025 Summer.</p> <p>Mathematical Sciences Research Institute (SLMath), Berkeley</p> <p>Postdoctoral Fellow Fall, 2022</p> <p>Max-Planck-Institut für Mathematik, Bonn</p> <p>Postdoctoral Research Fellow 2021-22</p>
EDUCATION	<p>Michigan State University</p> <p>Ph.D. Mathematics 2021</p> <ul style="list-style-type: none">• Advisor: Matthew Hedden <p>Ramakrishna Mission Vivekananda Educational and Research Institute, India</p> <p>M.Sc. in Mathematics, 2015</p>
PUBLICATIONS	<p>On localizing groups of exotic diffeomorphisms of 4-manifolds <i>arXiv preprint</i> (with Konno).</p> <p>Gompf's cork and Heegaard Floer homology <i>arXiv preprint</i> To appear in the <i>IMRN</i> (with Dai, and Zemke).</p> <p>Involutions and the Chern–Simons filtration in instanton Floer homology <i>arXiv preprint</i> (with Alfieri, Dai, and Taniguchi).</p> <p>Exotic Dehn twists on 4-manifolds <i>arXiv preprint</i> (with Konno, and Taniguchi).</p> <p>From diffeomorphisms to exotic phenomena in small 4-manifolds <i>arXiv preprint</i> (with Konno, and Taniguchi).</p> <p>Rank-expanding satellites, Whitehead doubles, and Heegaard Floer homology <i>arXiv preprint</i> (with Dai, Hedden and Stoffregen).</p> <p>The (2,1)-cable of the figure-eight knot is not smoothly slice. To appear in the <i>arXiv Inventiones Mathematicae</i> (with Dai, Kang, Park and Stoffregen).</p> <p>Knot Floer homology and surgery on equivariant knots <i>arXiv preprint</i>.</p>

INVITED
TALKS

Equivariant knots and knot Floer homology. To appear in the *Journal of Topology* (with Dai and Stoffregen).

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

University of Texas at Austin, Topology Seminar, 2024

Link invariants and surfaces in 4-manifolds, AMS special session, University of Texas, San Antonio, 2024

Braids Reunion Workshop, ICERM, Brown University, 2024

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

University of British Columbia, Topology seminar, 2024 (unable to travel)

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, (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, <i>Topics in Topology</i> , 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	<p>Referee for <i>Advances in Mathematics</i>, <i>Algebraic & Geometric Topology</i>, <i>Compositio Mathematica</i>, <i>Geometry & Topology</i>, <i>Journal of Topology</i>, <i>K3 problem list</i>, <i>Selecta Mathematica</i>.</p> <p>Mentor for an REU project (Rutgers University, Summer 2023) on the topic <i>Generalized Mazur pattern and Bordered Heegaard Floer homology</i></p>
ORGANIZATION	<p><i>Co-organizing a special session in JMM, 2025 called Concordance and Cobordism in Low-dimensions with Maggie Miller and Ryan Stees</i></p> <p><i>Co-organizing Rutgers Geometry and Topology weekly seminar, 2024</i></p> <p><i>Co-organized Rutgers Gauge Theory, Low-Dimensional Topology, and Geometric Analysis Conference 2024</i></p> <p><i>Co-organized Rutgers DIMACS REU, Summer 2023</i></p> <p><i>Co-organized Postdoctoral Research Seminar on Floer homotopy theory, MSRI-SLMATH, 2022</i></p> <p><i>Nearly Carbon Neutral Geometry Topology Conference, co-organized a mini-session, virtual conference, 2021.</i></p> <p><i>Weekly Departmental student Geometry and Topology seminar, MSU, 2017-2018.</i></p> <p><i>Co-organized Graduate Student Topology and Geometry Conference, MSU, 2017.</i></p>
OUTREACH	Acted as a mentor for a non-profit organization, <i>Padakshep</i> , based in India, which supports underprivileged meritorious school students with financial assistance and academic guidance.