Amey Abhay Joshi

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Education

Michigan State University: PhD in mathematics College of Natural Sciences	(ongoing)
Michigan State University: Masters in Mathematics College of Natural Sciences	Dec'25
IISER Pune: Master of Science	May '22
IISER Pune: Bachelor of Science	May '22
Vivekanand College, Kolhapur:11th and 12th standard	July '15-June '17
S.M.Lohia high school, kolhapur: 5th-10th standard 10 th standard SSC exam percentage :96/100	June '09-April '15

Employment

MSU-Teaching Excluded Assistant II	Aug22-May23
MSU-Teaching Assistant MTH234	Summer 23, Fall 23
MSU Summer Topology Program Mentor	Summer 23
MSU-Teaching Assisstant MTH 314- Matrix Algebra with Applications	Spring 24
MSU-instructor of record - MTH314	Summer 24
Mathematics Instrctor- Louis Stokes Alliance for Minority Participation (LSAMP) Summer 24	
Grader - MTH327H	Fall 24
TA MTH314	Spring 25
Lead TA MTH124	Spring 25
Lead TA- for first year grad students	Summer 25
iSTEM Math instructor	Summer 25
Graduate Real Analysis TA	Fall 25
Lead TA - MTH 124 Survey of calculus	Fall 25

Research Interests Khovonov Homology, Heegard-Floer, Symplectic Topology, Four manifold Theory.

Publications

Abelian branched covers of rational surfaces
with Robert Harris, Doug Park, Mainak Poddar
In Preparation: Spectral Sequences in Lasagna theory

Research projects

Advisor

- Khovanov Homology and quantum error-correction — with Zaiku Group
- Inverse problems in Machine Learning — Prof. Mark Iwen
- Skein Lasagna Modules and Spectral Sequences — Prof. Matthew Stoffregen
- Kirby color for TQFTs and knot theory based invariants — Prof. Matthew Hedden, Prof. Matthew Stoffregen
- Sheaf Theoretic applications of Atiyah Floer Conjectures — Prof. Matthew Hedden

- Four Maifolds and Gauge Theory — Doug Park
  MS Thesis project
- Symplectic Classes of representations — Steven Spallone

organizational and Volunteer experience

- Co-organizer : Graduate Student Topology and Geometry Conference — 2024
- Mathematics Mentor - Loius Stokes Alliance for Minority Participation Summer 2024
- Organizer- Kirby Color and Skein Lasagna Modules Seminar — Fall 2024
- Volunteer- Math night for Elementary School — Fall 2024
- Instructor and Project Guide: Computational applications of matrix algebras- Student Projects — Summer 2024
- Organizer- Deeper structures in Lasagna Modules of TQFTs — Spring 25

Reading Projects

Advisor

- Kirby color for Khovonov Homology — Matthew Stoffregen, Matthew Hedden
- Floer Homology — Matthew Stoffregen, Matthew Hedden
- Four Manifolds and Gauge Theory — Prof. Doug Park
- h-cobordism theorem
  semester project SPRING 2021, — Prof. Mainak Poddar
- Characteristic Classes and Milnor's exotic sphere
  Summer 2020 — Prof. Mainak Poddar
- Lie Groupoids and Orbifolds
  as a part of VSRP 2020 — Prof.S.K.Roushon
- Schemes, Complex Manifolds and non-algebraic manifold — Dr. Vivek Mallick
  mini project of Algebraic Geometry course
  SPRING 2021

Conferences and Workshops-

- Workshop- Scottish Talbot on Alegbra and Topology
- Links in 3 and 4 dimensional Manifolds, ICERM, May 2025
- International Georgia Topology Conference, Athens, May 2025
- New structures in low dimensional topology, Budapest 2024 (online participation due to technical travel issues)
- 41st Workshop in Geometric Topology 2024
- Trisectors Workshop 2023
- Introductory Workshop: Floer Homotopy Theory Sep'22
- "Geometric Topology" conference Dec-2019.
- IISc-IISER math symposium Sep-2021.
- Unifying Themes in Geometry Sep 2021.

Talks

- Diagramatic non-vanishing result - STOAT'26
- Inverse problems in Electro Magnetic Thoeries - April' 25
- Abelian Branched Covers of Rational Surfaces- 41st Geometric Topology workshop
- "Khovonov Homology returns" (How to get manifold invariants from knot invariants) at MSU student topology seminar Fall'24
- organizer and main presenter - "kirby color for Khovonov Homology" seminar Fall'24
- Symplectic Geography Problem - MSU student topology seminar Fall'23
- Lagrangian Floer Homology - Fall'23
- Morse-Bott Theory- Fall'23
- Kirby Color in Khovonov Homology - Series of weekly talks Fall'24

Awards and Honors

- Graduate Research Associate Fellowship Spring'26
- Infosys foundation scholarship 2021-22
- TIFR Visiting Student Research Program fellow Summer 2020
- IISER Mohali Summer Research fellow Summer 2019
- National Graduate Physics Exam 2018-19: national top 1 percent
- DST-INSPIRE SHE fellow since 2017
- IIT-JEE Advanced 2017 All India Rank-5056
  (equivalent to 99 percentile)

References (Industrial Research)

- Bamborde' Balde' , Founder:Zaiku Group
- Prof. Mark Iwen, Department of Mathematics

References (Research)

- Prof. Matthew Hedden, Department of Mathematics, MSU
- Dr. Matthew Stroffregen, Department of Mathematics, MSU
- Prof.Doug Park, Department of Mathematics, University of Waterloo, Ontario, Canada.
  email : bdpark(AT)uwaterloo.ca
- Prof.Mainak Poddar, Chair, Department of Mathematics, IISER Pune.
  email : mainak(AT)iiserpune.ac.in
- Dr.Steven Spallone, Associate professor, Department of Mathematics IISER Pune.
  email : sspallone(AT)iiserpune.ac.in

References (Teaching)

- Tsvetanka Sendova, Department of mathematics, MSU.
- Jamillah C Gross-Caldwell, specialist and LSAMP coordinator, MSU

Software

- Python
- SageMath
- LaTeX
- MATLAB
- HTML

Languages

- English : Fluent
- Hindi : Fluent
- Marathi: Mother Tongue
- Sanskrit: High school elective