Arghan Dutta

Department of Mathematics and Statistics · University of Ottawa, Ontario, Canada

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Research Interests

Higher category theory and categorical homotopy theory.

Education

Ph.D. in Mathematics *January 2026 – Present*
University of Ottawa, Canada
Advisor: *Martina Rovelli*

Ph.D. in Mathematics *September 2024 – December 2025*
University of Massachusetts Amherst, USA
Advisor: *Martina Rovelli*

M.S. in Mathematics *August 2021 – April 2024*
Indian Institute of Science, India
Advisor: *Siddhartha Gadgil*

B.Sc. in Mathematics *September 2017 – October 2020*
The Bhawanipur Education Society College, India

Papers

The Morita $(\infty, 2)$-category of a monoidal category as a 2-complicial set *2025*
Joint with Stefano Luneia, Martina Rovelli, and Sam Silver [arXiv]

Reports & Expositions

- A_∞-operads and May's recognition principle [pdf]
- Higher categories of n-bordisms [pdf]
- Bousfield–Friedlander theorem [pdf]
- Smith's recognition lemma [pdf]
- Simplicial homotopy type theory — an introduction to the category theory of Segal types [pdf]
- Existence and uniqueness of Haar measure on locally compact topological groups [pdf]

Academic Achievements

NBHM Research Award in Mathematics *2022*
National Board of Higher Mathematics, Dept. of Atomic Energy, Government of India

Indian Institute of Science Integrated Ph.D. Fellowship *2021*
Indian Institute of Science, Bangalore, India

All India Rank 33, IIT-JAM Mathematics *2021*
Organized by the Indian Institute of Science, Bangalore, India

All India Rank 18, MMath Entrance Examination *2020*
Organized by the Indian Statistical Institute, Kolkata, India

First Place, Analytica Mathematics Talent & Quiz Competition *2019*
Department of Mathematics, St. Xavier's College, Kolkata, India

Selected for the Mathematics Training and Talent Search Programme *2019*
Mathematics Training and Talent Search Trust, India

Cleared Joint Entrance Examination (Advanced & Mains) *2017*
Indian Institute of Technology Madras / National Testing Agency, India

Conferences & Workshops

International Category Theory Conference CT2025 *July 2025*
Masaryk University, Brno, Czech Republic

Midwest Topology Seminar 2025 *March 2025*
University of Notre Dame, USA

Dame Kathleen Ollerenshaw Workshop on Categorical Logic & Higher Categories *December 2024*
University of Manchester, UK

Young Homotopy-Theorists Online Meeting
Organized by Julie Rasmusen (University of Warwick) and Torgeir Aambø (Norwegian University)

Applied Category Theory *(attended online)* *July 2023*
University of Maryland, College Park, USA

Dualities in Topology and Geometry *May 2023*
ICTS, Tata Institute of Fundamental Research, India

National Seminar on Contemporary Research in Theoretical & Applicable Mathematics *August 2018*
The Bhawanipur Education Society College, India

Talks & Presentations

Higher categories of bordisms — Graduate Student Seminar, UMass Amherst *2025*

A_∞-operads and May's recognition principle — Graduate Student Seminar, UMass Amherst *2025*

Higher categories of n-bordisms — MS thesis defense, Indian Institute of Science *2024*

The simplicial interpretation of Univalent Type Theory — Bangalore Category Theorists *2024*

Small object argument and cofibrantly generated model categories — IIT Bombay *2023*

n-Globular sets and strict n-categories — Cult of Categories & Types, IISc *2023*

Theory of bicategories — Cult of Categories & Types, IISc *2023*

Structures on monoidal categories — Cult of Categories & Types, IISc *2023*

Simplicial Homotopy Type Theory — Integrated Ph.D. project presentation, IISc *2023*

On the properties of maps between Zariski spaces induced by integral extensions — IISc *2022*

On positive kernels and tensor product of Hilbert spaces — IISc *2022*

On the introduction to categorical logic — National Mathematics Day, BESC *2022*

On the introduction to category theory — Prime Time Seminars, IISc *2022*

Teaching and Grading

Math 1341 — Introduction to Linear Algebra *Winter 2026*
Discussion section leader, University of Ottawa

Math 1320 — Calculus I *Winter 2026*
Discussion section leader, University of Ottawa

Math 2355 — Introduction to Geometry *Winter 2026*
Grader, University of Ottawa

Math 132 — Calculus II *Fall 2025*
Discussion section leader, University of Massachusetts Amherst

Calculus Tutoring Centre *Fall 2025*
Tutor, University of Massachusetts Amherst

Calculus Tutoring Centre *Spring 2025*
Tutor, University of Massachusetts Amherst

Math 621 — Complex Analysis *Spring 2025*
Grader, University of Massachusetts Amherst

Math 235 — Introduction to Linear Algebra *Spring 2025*
Grader, University of Massachusetts Amherst

Math 411 — Introduction to Abstract Algebra I *Fall 2024*
Grader, University of Massachusetts Amherst

Math 370 — Writing in Mathematics *Fall 2024*
Grader, University of Massachusetts Amherst