Sayantika Mondal

PhD Student · Mathematics
Graduate Center, City University of New York
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Education & Appointments

Fordham University — *New York, USA*
Peter M. Curran Visiting Assistant Professor — *August 2026 - July 2030*

The Graduate Center, City University New York — *New York, USA*
PhD student in Mathematics — *August 2020 - July 2026*
Advisor: Ara Basmajian

The Graduate Center, City University New York — *New York, USA*
M. Phil — *March 2023*

Indian Institute of Science Education and Research, Pune — *Pune, India*
5 Year Intergrated BS-MS — *August 2015 - June 2020*

- CGPA - 9.3| Graduated with Distinction

DAV Model School, IIT, Kharagpur — *West Bengal, India*
2015

- 12 th Grade | Percentage- 95.2
- 10 th Grade | CGPA - 10

Research

The inf spectrum of moduli space — *2026*
Joint with · Ara Basmajian, Hugo Parlier
- Improving the upper bound from doubly-exponential to exponential, and showing the designer metrics realizing the spectrum are dense in the thick part of moduli space.
- arXiv:2610.15926

Asymptotic Enumeration of Minimally Intersecting Filling Curve Systems on Closed Surfaces — *2026*
Sayantika Mondal
- Counting mapping class group orbits of minimal filling curve systems by encoding them as unicellular 4-regular ribbon graphs and applying symmetric-group character theory; obtaining asymptotics and the best known bound on the number of minimal filling single curves.
- arXiv:2610.09102

Distinguishing curve types and designer metrics — *2025*
Joint with · Ara Basmajian
- Studying length infima over the Teichmuller space for filling closed curves on hyperbolic surfaces and its relations to self-intersection number of curves. We construct curves with same intersection number but different length infimum.
- arXiv:2508.08539

Estimating distances in simplicial complexes with applications to 3-manifolds and handlebody-knots — *2025*
Joint with · Puttipong Pongtanapaisan, Hanh Vo
- Understanding relation between distances in curves and pants complexes with applications to handlebody links in 3-manifolds
- arXiv:2505.00815

Infimum lengths of filling curves on surfaces with boundary — *Forthcoming*
Sayantika Mondal
- Constructing filling curves on surfaces with boundary and their inf lengths.

Non simple curve complexes — *In progress*
Joint with · Meenakshy Jyothis
- Constructing complexes of curves that include non-simple curves in addition to simple ones

Past Projects

Contact Structures and foliations via open books

Australian National University

Maters Thesis · Joan Licata

May, 2019 - May 2020

- Understanding relations between contact structures and foliations via open book decompositions.

Formalization of Quasi Isometries

Universität Regensburg, Germany

DAAD-WISE Summer Internship · Clara Löh

May, 2018 - Jul, 2018

- Read: Introduction to Geometric Group Theory by Clara Löh.
- Learnt to use Isabelle to check proofs and formalised theorems about quasi isometries using Isabelle.

Application of Number Theory in Coding Theory and Cryptography

HRI, Allahabad, India

SRFP - Indian Academy of Sciences · B. Ramakrishnan

May, 2017 - Jun, 2017

- Read: A First Course In Coding Theory by Raymond Hill.
- An Introduction To Mathematical Cryptography by Jeffrey Hoffstein, Jill Pipher and Joseph H Silverman.

Diffusion in Ehrenfest Gas

BARC, Mumbai, India

NIUS Physics Project · Sudhir R. Jain

May, 2016 - Dec, 2017

- The main objective is to determine diffusion coefficient of the Ehrenfest Model.
- Also analyzing relation between shape of reflectors and diffusion rates.

Grants and Achievements

2026	Bowker Travel Award	*Graduate Center*
2025	Student Conference Organizer Award	*Graduate Center*
2025	Student Travel Award	*Graduate Center*
2025	Black and Schwartz Science Conference Travel Award	*Graduate Center*
2024	Claire Booth Luce Fund Travel award	*Graduate Center*
2024	Doctoral Student Research Grant	*Graduate Center*
2024	Hunter Faculty Travel award	*Hunter College*
2023	Umesh & Shailaja Nagarkatte Fellowship	*Graduate Center*
2023	GC Conference Presentation Support	*Graduate Center*
2023	Open Knowledge fellowship	*Graduate Center*
2022	Nagarkatte Travel award	*Graduate Center*
2022	Provost's Pre-Dissertation Summer Science Research Grant	*CUNY*
2022	Doctoral Student Research Grant	*Graduate Center*
2019	Future Research Talent Fellowship	*ANU, Australia*
2018	DAAD WISE Summer Research Fellowship	*UR, Germany*
2018	SN Bose Fellowship (Nominated)	
2017	Science Academies' Summer Research Fellowship	*HRI, Allahabad*
2016	National Initiative on Undergraduate Science(NIUS) Fellowship	*HBCSE(TIFR)*
2014	Kishore Vaigyanik Protsahan Yojna (KVPY) Fellowship-SX (Rank- 888)	

Teaching

F'26	Math 1108 L02, L04: Finite Mathematics	*Fordham*
S'26	Math 1109: Math for Business: Calculus, Math 1207: Calculus II	*Fordham*
F'25	Math 1206: Calculus I and Recitation, Math 12550.05 Precalculus Recitation	*Fordham, Hunter*
Sum'25	Math 1109: Math for Business: Calculus	*Fordham*
S'25	Math 1109: Math for Business: Calculus, Math 12550.R014 Precalc Recitation, Math 2009 Precalc	*Fordham, Hunter, Baruch*
F'24	Math 1100: Finite Math, Math 12550.R016 Precalculus Recitation, Math 1030 College Algebra	*Fordham, Hunter, Baruch*
S'24	Math 12550.R015 Precalculus, Math 2003 Precalculus and Elememnts of Calculus Recitation	*Hunter, Baruch*
F'23	Math 1023 College Algebra, Math 12550.R016 Precalculus Recitation	*Baruch, Hunter*
S'23	Math 12550.14 Precalculus, Math 12550.R014 Precalculus Recitation	*Hunter*
F'22	Math 12550.0 Precalc, Math 12550.02 Precalc	*Hunter*

Invited Talks

Sep 2026	New Developments of Teichmüller Theory workshop	*Oberwolfach*
Jun 2026	Seminar talk	*U Luxembourg*
Jun 2026	Seminar talk	*U Tübingen*
May 2026	Curve Counting: What's Next?	*HMI, Dublin*
Mar 2026	Seminar Talk	*Paris-Saclay*
Feb 2026	Mathematics Department Special Seminar	*Fordham University*
Sep 2025	Seminar Talk	*Yale University*
Apr 2025	Binghamton Geometry and Topology seminar	*Binghamton*
Mar 2025	Geometric Group Theory session, 58th Spring Topology and Dynamics Conference	*Virginia*
Jan 2025	JMM 2025	*Seattle*
Nov 2024	CUNY Dynamics and Complex geometry Seminar	*GC CUNY*
Apr 2024	ASU Geometry Seminar	*Arizona*
Mar 2024	SMART workshop	*Luxembourg*
Nov 2023	Hyperbolic Geometry Seminar	*Graduate Center, NY*
Aug 2023	Seminar Talk	*IISER Pune, India*
July 2023	Shimane University Seminar	*Japan*
June 2023	Geometry-Topology student seminar	*Graduate Center, NY*

Service, Organizing & Outreach

Leadership & Service

- Research Committee, Graduate Center (2024-2026).
- Mathematics Department representative, Graduate Council (2024-2025).
- Leader, CUNY Women in STEM chartered organization (2022-present).
- President, AWM Chapter, Graduate Center (2022-2024).
- Co-Chair for Student Activities, DGSC student government (2023-2024).
- Officer for Student Life and Services, Graduate Center (2022-2023).
- Student representative, Mathematics Department.

Organizing

- CUNY Women in Math conference (2025).
- Co-organizer, Communicating Our Science series, CUNY (2024-2025).
- CUNY organizer, ENYGMMA seminar with Stony Brook, Columbia and NYU.
- Founder, weekly Department Tea, Math Lounge (DGSC grant).
- OER course development, Open Knowledge Fellowship, GC Library (2023).
- Graduate Student Colloquium (Pizza Seminar), Graduate Center (2021-2022).
- Coordinator, Mathematics Club, IISER Pune (2017-2018).
- Publicity Coordinator and math question team, Mimamsa (2017).

Community & Outreach

- Author, "It's time for women to overcome historical barriers in STEM," Campus News (2025).
- Panelist, GC Mathfest, Graduate Center (2023, 2024).
- Speaker, Communicating Your Science, ASRC (2024).
- Panelist, pathways to a research career, ANU, Australia (2022, 2023).
- Panelist, "How to get a PhD position?" Instagram live (2021).
- Editor, Mathzine inaugural edition, IISER Pune (2018).
- Volunteer, Make-A-Wish Foundation, New York.

Hobbies

- Honorable Mention, All India Essay Writing Competition, UNIC and SRCM (2011-2013).
- First prize, essay writing, International Workshop on Biodiversity and Climate Change, IIT Kharagpur (2010).
- Diploma in fine arts, Bharatanatyam and recitation; 15 years of training.