

Sayantika Mondal

PHD STUDENT · MATHEMATICS

Graduate Center, City University of New York

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Interests - Low dimensional Topology, Hyperbolic Geometry, Teichmüller Theory

Education

The Graduate Center, City University New York

PHD STUDENT IN MATHEMATICS

Advisor: Ara Basmajian

New York, USA

August 2020 - Present

The Graduate Center, City University New York

M. PHIL

New York, USA

March 2023

Indian Institute of Science Education and Research, Pune

5 YEAR INTEGRATED BS-MS

- CGPA - 9.3
- Graduated with Distinction
- Courses (Mathematics) - Single and Multi Variable Calculus, Introduction to Proofs, Linear Algebra, Basic Structures in Mathematics, Probability and Statistics, Analysis, Group Theory, Point Set Topology, Combinatorics, Complex Analysis, Calculus on Manifolds, Rings and Modules, Fourier Analysis, Graph Theory, Algebraic Topology, Measure Theory, Galois theory, ODE, Representation Theory, Differential Geometry, Algebraic Number Theory, Cryptography, Functional Analysis

Pune, India

August 2015 - June 2020

DAV Model School, IIT, Kharagpur

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

West Bengal, India

2015

Research

Length infima of filling curves on hyperbolic surfaces

In progress

JOINT WITH · ARA BASMAJIAN

- Study length infima over the Teichmüller space for filling closed curves on hyperbolic surfaces. In particular explore relations between this infimum and self-intersection number of curves. We construct curves with same intersection number but different length infimum.

Estimating distances in simplicial complexes with applications to 3-manifolds and handlebody-knots

2025

JOINT WITH · PUTTIPONG PONGTANAPAIAN, HAHN VO

- Understanding relation between distances in curves and pants complexes with applications to handlebody links in 3-manifolds
- arXiv:2505.00815

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

- Aim: To understand 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.
- A Course In Number Theory And Cryptography by Neal Koblitz.

Diffusion in Ehrenfest Gas

NIUS PHYSICS PROJECT · SUDHIR R. JAIN

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

BARC, Mumbai, India

May, 2016 - Dec, 2017

Ecocriticism

SUMMER PROJECT · POOJA SANCHETI

- Ecocritical analysis of Amitava Ghosh's novel "The Hungry tide".
- Trying to understand the relationship between conservation and humanity.

IISER, Pune, India

May, 2016 - Jun, 2016

Grants and Achievements

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 Tracel 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

Sum'25	Math 1109: Math for Business: Calculus	Fordham University
S'25	Math 1109: Math for Business: Calculus	Fordham University
S'25	Math 12550.R014 Precalculus Recitation	Hunter College
S'25	Math 2009 Precalculus	Baruch College
F'24	Math 1100: Finite mathematics	Fordham University
F'24	Math 12550.R016 Precalculus Recitation	Hunter College
F'24	Math 1030 College Algebra	Baruch College
S'24	Math 12550.R015 Precalculus Recitation	Hunter College
S'24	Math 2003 Precalculus and Elememnts of Calculus	Baruch College
F'23	Math 1023 College Algebra	Baruch College
F'23	Math 12550.R016 Precalculus Recitation	Hunter College
S'23	Math 12550.14 Precalculus	Hunter College
S'23	Math 12550.R014 Precalculus Recitation	Hunter College
F'22	Math 12550.06 Precalculus	Hunter College
F'22	Math 12550.02 Precalculus	Hunter College

Talks

May 2025	Mapping Class Groups and Beyond	Ankara, Turkey
Apr 2025	Binghamton Geometry and Topology seminar *	Binghamton
Mar 2025	New trends in Teichmüller theory	ICTS, Bangalore
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
Aug 2024	Geometry in groups	ICTS Bangalore
Jul 2024	Moving to higher rank: from hyperbolic to Anosov	Cetraro, Italy
Jul 2024	Geometry and Dynamics of surfaces beyond finite type	Heidelberg
June 2024	SLMath summer school : Introduction to Quantum-Safe Cryptography	IBM, Zurich
Apr 2024	ASU Geometry Seminar*	Arizona
Apr 2024	GATSBY	Yale
Mar 2024	SMART workshop*	Luxembourg
Dec 2023	Iberoamerican Congress on Geometry	Pucon, Chile
Nov 2023	BUGCAT	Binghamton, NY
Nov 2023	Hyperbolic Geometry Seminar	Graduate Center, NY
Aug 2023	Seminar Talk	IISER Pune, India
July 2023	Shimane University Seminar	Japan
April 2023	Complex dynamics mini conference	Utah
June 2023	Geometry-Topology student seminar	Graduate Center, NY
Jan 2023	Log Cabin Workshop	Arizona
Aug 2022	Workshop on Big Mapping Class groups	Boston College
July 2022	Metric Geometry CXoncentration week	Texas A & M
Feb 2022	Lightning Talk	Graduate Center

* Invited talks

Extracurricular Activity

- Research committee member at the Graduate Center
- Volunteer with Make-a-wish
- CUNY Women in STEM group leader
- Co-chair for Student Activities for the Graduate Center Student Government (2023-2024)
- President of the GC AWM Chapter (2022-2024)
- Officer for Student Life and Services at the Graduate Center for the academic year 2022-2023
- I'm am the CUNY organizer for ENYGMMa seminar
- Mentored two undergrad students reading projects as part of a CUNY DRP program
- Organized the Graduate student colloquium at Graduate Center
- I help mentor and guide undergraduates especially from India to navigate research and grad school applications abroad.
- I have pursued Fine Arts, Bharatnatyam and Recitation for around 15 years and have obtained Diploma in them from Pracheen Kala Kendra (National Board).
- Received first prize in Essay writing competition as a part of International Workshop on Biodiversity and Climate Change, 2010 at IIT Kharagpur.
- Received Honorable Mention in All India Essay Writing Competition organised by UNIC and SRCM in 2011, 2012 and 2013.
- I was the Coordinator of the Mathematics Club at IISER Pune (2017-2018).
- Served as the Mimamsa Publicity Coordinator (2017).
- I was a part of the Math question making team for Mimamsa - A national level science quiz for undergraduates conducted by IISER Pune.