Abhirup Chatterjee

Senior Research Fellow · Ph.D. Student in Mathematics
The Institute of Mathematical Sciences (IMSc), Chennai, India

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RESEARCH INTERESTS

CURRENT Number theory over function fields · Distribution of arithmetic functions

ADDITIONAL L-functions · Modular forms · p-adic analysis

EDUCATION

Ph.D. in Mathematics — 2023 – Present
The Institute of Mathematical Sciences (IMSc), Chennai, Tamil Nadu, India
Advisor: Prof. Anirban Mukhopadhyay

M.Sc. in Mathematics CGPA 9.61/10 — 2021 – 2023
The Institute of Mathematical Sciences (IMSc), Chennai, Tamil Nadu, India
Thesis: *On the Marcus–Spielman–Srivastava Solution to the Kadison–Singer Problem*
Thesis Advisor: Prof. Vijay Kodiyalam

B.Sc. (Hons.) in Mathematics, with Statistics and Computer Science — 2018 – 2021
CGPA 8.92/10
Ramakrishna Mission Residential College, Narendrapur (affiliated to the University of Calcutta)

PREPRINTS

Chowla Conjecture for the Truncated Möbius Function over $\mathbb{F}_q[t]$
A. Chatterjee · Preprint, 2026 arXiv:2610.06471

TALKS GIVEN

L-functions over Function Fields — Jul 2025
IMSc, Chennai
Analytic properties of L-functions over function fields and recent developments in the study of their mean values, drawing on Rosen's framework, J. L. Thunder's paper and related literature.

The Frobenius Theorem — Nov 2022
IMSc, Chennai
The Frobenius Theorem for smooth manifolds.

The Riemann–Roch Theorem — Jun 2022
IMSc, Chennai
The Riemann–Roch Theorem for Riemann surfaces.

Topological Games — Jan 2022
IMSc, Chennai
The Choquet game, the strong Choquet game, the Banach–Mazur game and their importance.

- **Hilbert's Nullstellensatz and the Correspondence between Geometric and Algebraic Objects** — Jan 2022
  IMSc, Chennai
  A proof of Hilbert's Nullstellensatz and the various one-to-one correspondences between geometric and algebraic objects.
- **'Non-Measurable' Sets and 'Measurable yet Non-Borel' Sets** — Jan 2022
  IMSc, Chennai
  Existence of non-measurable subsets of the real line, and examples of measurable sets that are not Borel, constructed using the Cantor function.

TEACHING EXPERIENCE

- **Teaching Assistant — Teachers' Enrichment Workshop** — Nov 2023
  "Panorama of Geometry"
- **Teaching Assistant — NPTEL course *The Geometry of Vision*** — Jun – Aug 2023
  Instructor: Prof. Vijay Ravikumar
- **Instructor — Real Analysis Workshop** — Jun 2022
  IMSc, Chennai
  Taught real analysis to first-year M.Sc. students from local universities.

WORKSHOPS & CONFERENCES

- **Equidistribution and Beyond** — Sep 2026
  Dr F. C. Kohli Center, CMI
  Lectures and presentations at the intersection of number theory, probability theory and ergodic theory, with a focus on applications of ergodic-theoretic methods in number theory.
- **Chennai–Tirupati Intercity Number Theory Conference** — Mar 2026
  IISER Tirupati
  Intercity conference on number theory and geometry; lectures on recent developments concerning zeros of Dedekind zeta functions, height functions, irrationality measures and complexity functions.
- **IWM Research in Groups: Classical and Finite Multiple Zeta Values** — Dec 2025
  IMSc, Chennai
  Lectures in the number theory group on the theory of multiple zeta values and multiple zeta functions, including relations between double zeta values and modular forms, and recent work of Hirose and Sato.
- **Primes, Patterns and Propagation** — Dec 2025
  IISER Kolkata
  Workshop at the crossroads of analytic and probabilistic number theory; lectures on L-functions, Siegel modular forms and interactions between number theory and graph theory.
- **Rain, Root and Riemann: A Symposium in Number Theory** — Oct 2025
  North-Eastern Hill University, Shillong
  Talks on convexity problems, Siegel modular forms, partition theory, GCD sums and extremal values of L-functions.
- **CIMPA–NCM Workshop on Automorphic L-functions** — Jul 2025
  IIT Ropar
  Lectures and problem sessions on modular forms, automorphic forms, L-functions and multiple zeta values, and their connections to broader themes in number theory.
- **Number Theory Working Group Meeting** — Mar 2025
  IMSc, Chennai
  Group project on the shape of number fields with Anwesh Roy and others, exploring geometric and heuristic perspectives on number fields.

Annual Analytic Number Theory Discussion Meeting Feb 2025

ISI Kolkata

Talks and discussions with leading researchers in analytic number theory.

Advanced Topics in Finite Fields (NCM Workshop) Jul 2023

IMSc, Chennai

Structure of finite fields, matrices and linear operators over finite fields, sequences, polynomials, exponential sums, and equations and varieties over finite fields.

COURSEWORK

Graduate IMSc, 2021 – Present · audited

Measure Theory | Commutative Algebra & Category Theory | Point-Set Topology | Complex Analysis | Functional Analysis | Galois Theory | Algebraic Topology | Lie Groups | Topics in Algebraic Combinatorics | Modular Forms | Representation Theory of Finite Groups | Arithmetic of Elliptic Curves | Algebraic Geometry (Hartshorne, Ch. I–II) | Circle Method

Undergraduate 2018 – 2021

Classical Algebra; Abstract Algebra I & II (Group Theory and Ring Theory); Advanced Algebra (Abstract Algebra III + Linear Algebra IV); Linear Algebra I, II, III; Real Analysis I, II, III; Multivariate Calculus; Complex Analysis; Metric Spaces; Analytical Geometry (2D and 3D); Vector Analysis; Application of Calculus; Ordinary Differential Equations; Partial Differential Equations; Probability and Descriptive Statistics I & II; Analytical Dynamics of a Particle; Analytical Statics; Numerical Analysis; Linear Programming; Game Theory.

SKILLS & LANGUAGES

COMPUTING Python | SageMath | Mathematica | LaTeX | HTML | CSS

LANGUAGES English | Bengali | Hindi