Samprit Ghosh

Curriculum Vitae
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Basic Information

Name	Samprit Ghosh
Office	MS 468, University of Calgary, 2500 University Drive NW, Calgary, AB, T2N 1N4
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Homepage	https://sampritgh.github.io

Employment

Sept 2023 - Current	*Postdoctoral Fellow* at Department of Mathematics and Statistics, **University of Calgary**.

Education

2023	**MSc, PhD**, *Department of Mathematics*, **University of Toronto.** Supervisor : Prof. V. Kumar Murty
2016	**MSc in Mathematics**, *Indian Institute of Technology*, Bombay
2014	**BSc in Mathematics**, *Ramakrishna Mission Residential College.* Affiliated to **University of Calcutta.**

Research Interests

Number Theory, Arithmetic Geometry

Publications

1. Minimal subfields of Elliptic curves, *Canadian Mathematical Bulletin*, 2024.
   DOI : 10.4153/S0008439524000341.

2. On Certain Polytopes Associated to Products of Algebraic Integer Conjugates, (with S. Albayrak, G. Knapp, K. D. Nguyen), arXiv : 2408.00250.
   (accepted, *Proceedings of the American Mathematical Society).*

3. Higher Euler-Kronecker constants, Ph.D. dissertation, available on ProQuest.

4. Higher Euler-Kronecker constants of Number Fields.
   (submitted) arXiv : 2411.17946.

5. Moments of Higher derivatives of the logarithmic derivative of Dirichlet L-functions, (submitted, pre-print available). arXiv

6. Factorization in the semigroup of L-functions and Artin's Conjecture,
   (Paper in preparation).

7. Gauss Sums on Elliptic Curves (with G. D. Patil),
   (Paper in preparation).

Other Research Projects

2024 Advancing Proof-Based Mathematics Education: AI-Enhanced Problem Solving in Group Theory (with T. Bitoun).
This project explores the use of AI chatbots to improve students' fluency with mathematical proofs, particularly in Algebra I.

2020 Research assistant in **Smart Villages** project, under Prof. V. Kumar Murty.
Focus : Encryption and privacy of data of the model's e-health architecture.

2017 Masters Project titled *Class Field Theory*
Supervisor : Prof. Kumar Murty

2015-16 Undergraduate thesis titled *Topics in Algebraic Curves*
Supervisor : Prof. Sudhir R Ghorpade

2015 Research Experiences for Undergraduates **(REU)** program funded by *NSF, USA & IUSSTF* at Louisiana State University.
Project title : *L-Functions of the Picard Family of Curves*
Supervisor : Prof. Jerome W. Hoffman

2013 Interdisciplinary undergraduate Project at *JBNSTS*
Project title : *Closed Orbits in Central Potential with Perturbations*
Supervisor : Dr. Sobhan Sounda, Presidency University, Kolkata.

Teaching Experience

Instructor

UCalgary Number Theory (327), Algebra I (315), Linear Methods I (211).

UToronto Calculus I (135), II (136), Linear Algebra I (223),
Concepts in Abstracts mathematics (246), Fields and Galois Theory (401)

Coordinator

UToronto Calculus II (136) : Fall 2021
Coordinated multiple sections, with multiple instructors and TAs.

Teaching Assistantships

UToronto Calculus, Linear Algebra, Groups and Symmetries, Algebra I and II, Polynomial
2016-23 Equations and Fields, Introduction to Number Theory etc.

Awards and Fellowships

2024 Nominated by the department for university wide teaching award titled : *2024 University of Calgary Teaching Award*, awaiting results.

2022 Doctoral Completion Award, School of Graduate Studies, University of Toronto.

2019	Arts & Science Program-level Fellowship, UofT.
2017	Arts & Science Alumni and Friends Graduate Scholarship, UofT.
2016	**Institute Silver Medal** for 1st rank holder in the department, IIT Bombay.
2015	**S N Bose Scholarship**, sponsored by *Indo-US Science and Technology Forum* for a summer research project in USA.
2014	**Institute Gold Medal**, for 1st rank holder in the department, Ramakrishna Mission Residential College, University of Calcutta.
2014	*NBHM* : National Board of Higher Mathematics *MA-MSc Scholarship* sponsored by Govt. of India
2014	All India Rank 1 in Madhava Mathematics Competition.
2012	*INSPIRE* : "Innovation in Science Pursuit for Inspired Research" Fellowship sponsored by *Department of Science and Technology, Govt. of India.*
2012	*JBNSTS* : Jagadis Bose National Science Talent Search Scholarship.

Academic Services, Supervision and Mentorship

2023-25	Co-supervising Masters Thesis of Mohamed Tlili, University of Calgary.
2024	*Refereed for* Bulletin of the Iranian Mathematical Society (BIMS).
2024	Postdoctoral representative on *Faculty of Science Council*, University of Calgary.
2019-21	Student member (for consecutive two years), *Graduate Courses Committee*, Department of Mathematics, University of Toronto.
2020	Mentor to high school student Michael Li under the **Math Outreach program**, University of Toronto.

Organization : Seminars and Conferences

2025	Organizer of **Alberta Number Theory Days XVI** conference at Banff International Research Station, Alberta.
2024-25	Organizer of **Calgary Algebra and Number Theory Seminar**, funded by PIMS.
2023	Organized a session titled : **Number Theory by Early Career Researchers** at 2023 CMS Winter Meeting, Montreal.
2019-23	Organized graduate *Learning seminars* at the Dept. of Mathematics, University of Toronto on the following topics. - Post-quantum cryptography : Isogeny Graphs. - Expander and Ramanujan Graphs. - Introduction to Abelian Varieties. - Class field Theory and Hilbert's 12th Problem.

Invited talks, Conferences and Summer schools

2024	CMS Winter meeting, session : Emerging Frontiers in Number Theory: Insights from Early-Career Researchers, invited speaker, *Vancouver*.
-	Fields Number Theory Seminar, invited speaker. *The Fields Institute, Toronto.*

- PIMS Lethbridge Number Theory and Combinatorics Seminar, invited speaker.
  University of Lethbridge.
- SCHOLAR II : A Scientific Celebration Highlighting Open Lines of Arithmetic Research, in honour of Prof M. Ram Murty, invited speaker.
  The Fields Institute, Toronto.
- Alberta Number Theory Days XV conference, attendee.
  Banff International Research Station, Alberta.

2023 CMS Winter Meeting, invited speaker. *Montreal.*

- CMS Summer Meeting, invited speaker. *University of Ottawa.*
- **Cyber Connexion** program on cybersecurity, participant.
  The Fields Institute, Toronto.

2017-23 Frequent speaker at the *GANITA seminars, University of Toronto.*

2022 Fields Medal Symposium, attendee.
  The Fields Institute, Toronto

2019 *Smart Villages* conference, invited speaker.
  The Fields Institute, Toronto.

- Encrypted Search conference, attendee.
  ICERM, Brown University, USA.

2018 Strength in numbers conference, attendee.
  Queen's University, Kingston.

- Connecticut Summer school in Number Theory, participant.
  University of Connecticut, USA
- CTNT 2018 conference, attendee. *University of Connecticut, USA.*
- *Smart Villages* conference, attendee. *The Fields Institute, Toronto.*

2016 Fields Medal Symposium, attendee. *The Fields Institute, Toronto.*

2015 *REU* summer school, participant.
  Louisiana State university, USA.

- Advanced Instructional School on Analytc Number Theory, participant.
  KIIT University. Organised by National Centre for Mathematics, India.

2014 Madhava Nurture Camps, participant.
  St. Xaviers College, Kolkata, India.

Miscellaneous

since 2021 Volunteer at *Isha Foundation* for the University Outreach program.
  Organize free events on yoga, breathing practices, and mindfullness meditation for University students.

2020-22 Volunteer Teacher at Vedanta Vidyamandir.
  Vedanta Society of Toronto, Ramakrishna Mission.

2018 Volunteer for COMC (Canadian Open Mathematics Challenge).

Languages Bengali (Native), English (Fluent), Hindi (Fluent), Sanskrit (Intermediate).

(prog.) Python, C++, SageMath, MATLAB, LaTeX

References

Research

1. **V. Kumar Murty** (murty@math.toronto.edu) (PhD advisor)
   Professor, University of Toronto.
2. **Dang-Khoa Nguyen** (dangkhoa.nguyen@ucalgary.ca) (Postdoc mentor)
   Associate Professor, Canada Research Chair, University of Calgary.
3. **Jacob Tsimerman** (jacobt@math.toronto.edu)
   Professor, University of Toronto.

Teaching

1. **Joe Repka** (repka@math.toronto.edu)
   Professor, University of Toronto.
2. **Jason Siefken** (siefkenj@math.toronto.edu)
   Associate Professor, Teaching Stream, University of Toronto.
3. **Jerrod Smith** (jerrod.smith@ucalgary.ca)
   Associate Professor (Teaching) and Associate Head, University of Calgary.