

Samprit Ghosh

Curriculum Vitae

Last updated : Feb, 2025

Basic Information

Name Samprit Ghosh
Office MS 468, University of Calgary, 2500 University Drive NW, Calgary, AB, T2N 1N4
Email samprit.ghosh@ucalgary.ca
Homepage <https://sampritgh.github.io>

Employment

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


Education

Nov 2023 **PhD**, *Department of Mathematics, University of Toronto.*
Supervisor : Prof. V. Kumar Murty
2017 **MS**, *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, Cryptography

Publications

1. Minimal subfields of Elliptic curves, *Canadian Mathematical Bulletin*, 2024, Vol 67(4), P1029-1045. [doi:10.4153/S0008439524000341](https://doi.org/10.4153/S0008439524000341)
2. On Certain Polytopes Associated to Products of Algebraic Integer Conjugates, *Proceedings of the American Mathematical Society*, Volume 153, Number 5, May 2025, Pages 1917–1932 (with S. Albayrak, G. Knapp, K. D. Nguyen ; to appear). <https://doi.org/10.1090/proc/17146>
3. Higher Euler-Kronecker constants, Ph.D. dissertation, available on ProQuest.
4. Higher Euler-Kronecker constants of Number Fields.
(submitted)  : [2411.17946](https://arxiv.org/abs/2411.17946).
5. Moments of Higher derivatives of the logarithmic derivative of Dirichlet L -functions, (submitted, pre-print available).

6. Factorization in the semigroup of L-functions and Artin's Conjecture, (with Peng-Jie Wong, 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 award titled : *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

- 2025 Alberta Mathematics Dialogue 2025 (upcoming) , invited speaker.
 - Algebra and Number Theory Seminar, invited speaker. *PennState, Eberly College of Science.*
- 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 Analytic 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 mindfulness 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, L^AT_EX

References

Research

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

Teaching

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