

Debanjana Kundu

Curriculum Vitae

Last Updated: December 3, 2020

PERSONAL DETAILS

Birth January 6, 1993
Address CRM, 2940-2950 Polytechnique Rd, Montreal, Quebec H3T 1J4
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EDUCATION

Class X 2008
CBSE (India)
98.6% (Mathematics 99, Science 99, English 93)

Class XII 2010
CBSE (India)
93.2% (Mathematics 98, Chemistry 95, Physics 91, English 94)
(Top 1% in both class X and class XII.)

BS-MS Dual Degree 2010-2015
Indian Institute of Science Education and Research, Mohali, India
CGPA 9.7

MA PhD 2015-2020
University of Toronto, Toronto, Canada

EMPLOYMENT

Université de Montréal Fall 2020
CRM-ISM PostDoc, Thematic Program: Cohomology in Arithmetic

University of British Columbia, Vancouver starting January 2021
PIMS PostDoc Fellow

PUBLICATIONS/ PREPRINTS

- Growth of Fine Selmer Groups in Infinite Towers
Canadian Mathematics Bulletin (2020) Volume 63 / Issue 4 pp. 921-936.
- Growth of p -Fine Selmer Groups and p -Fine Shafarevich-Tate Group in $\mathbb{Z}/p\mathbb{Z}$ -Extensions
Accepted for publication (Journal of the Ramanujan Math Society)
- Growth of Fine Selmer Groups in Uniform pro- p Extensions
Accepted for publication (Annales Mathématiques du Québec)

4. Perfect Powers that are Sums of Squares of an AP (with V. Patel)
Accepted for publication (Rocky Mountain Journal of Mathematics)
5. Control Theorems for Fine Selmer Groups (with Meng Fai Lim)
pre-print available upon request, submitted
6. On an Analogue of Kida's Formula for Fine Selmer Groups
pre-print available upon request, submitted
7. Structure of Fine Selmer Groups in p -adic Lie Extensions (with R. Sujatha)
pre-print available upon request

FELLOWSHIPS

INSPIRE Fellowship <i>Department of Science and Technology, Government of India</i>	2010-2015
JNCASR Summer Fellowship <i>JNCASR, India</i>	2012
DAAD WISE Scholarship <i>Germany</i>	2013
IAS Summer Fellowship (not availed) <i>Indian Academy of Sciences, India</i>	2013
MITACS Globalink Research Internship <i>Canada</i>	2014
Rhodes Scholarship finalist (top 18) <i>Oxford University, UK</i>	class of 2015
TIFR VSRP Fellowship <i>TIFR, India</i>	2015
BIGS Scholarship for Graduate Studies (not availed) <i>Hausdorff Center for Mathematics, Bonn, Germany</i>	2015-2018
MITACS Graduate Fellowship <i>Canada</i>	2015 - 2018
Vivekananda Graduate Award for International Students <i>University of Toronto</i>	2018 - 2019
General Motors Women in Mathematics and Science Award <i>University of Toronto</i>	2019 - 2020
CRM-ISM Postdoctoral Fellowship <i>Université de Montréal</i>	Fall 2020
PIMS Postdoctoral Fellowship	Jan 2021- Dec 2022

University of British Columbia, Vancouver

SEMINARS

Introduction to Game Theory
Mathematics Club, IISER Mohali

Aug 2012

27 Lines on a Cubic <i>Department Colloquium, IISER Mohali</i>	Nov 2013
Proofs of Quadratic Reciprocity <i>Department Colloquium, IISER Mohali</i>	April 2014
Linear Groups- Malcev's Theorem and Selberg's Lemma <i>IISER Mohali</i>	April 2014
Principal L-Functions of the Linear Group <i>Department of Math, University of Toronto</i>	August 2016
Understanding the Rank Distribution Conjecture <i>Graduate Seminar, Department of Math, University of Toronto</i>	Nov 2016
What is an Elliptic Curve? <i>Graduate Seminar, Department of Math, University of Toronto</i>	April 2017
Fun with Tilings <i>Graduate Seminar, Department of Math, University of Toronto</i>	Fall 2018
Möbius Functions and Number Theory <i>Math Camp, Department of Math, University of Toronto</i>	Summer 2019
Pigeonhole Principle and its Applications <i>Graduate Seminar, Department of Math, University of Toronto</i>	January 2020
Iwasawa Theory and Pseudo-nullity Conjectures <i>Invited talk, Algebra & Number Theory Seminar, University of Laval</i>	January 2020
Iwasawa Theory of Fine Selmer Groups <i>Invited talk, QVNTS, Montreal</i>	January 2020
Overview of Iwasawa Theory <i>Invited talk, Junior Number Theory Seminar, University of Toronto</i>	October 2020
Iwasawa Theory of Fine Selmer Groups <i>Invited talk, Fields Number Theory Seminar video</i>	November '20
TBA <i>Invited talk, PIMS Online Colloquium</i>	Winter 2021

CONFERENCES, WORKSHOPS AND SUMMER SCHOOLS

GANITA Conference, The Fields Institute <i>participant</i>	June 2016
Summer Graduate School, MSRI <i>Summer school on Introduction to Character Theory and the McKay Conjecture.</i>	July 2016
PIMS Summer School, UBC Vancouver <i>Summer School on Representation Theory of Finite Groups</i>	July 2016
Fields Medal Symposium, The Fields Institute <i>participant</i>	Nov 2016
Montreal-Toronto Workshop in Number Theory, CRM <i>Workshop on Mock Modular Forms</i>	Dec 2016
5 Day Workshops at BIRS, Banff <i>Workshop on Diophantine Approximation and Algebraic Curves</i>	July 2017
Summer Graduate School, MSRI <i>Summer school on Automorphic Forms and Langlands Program</i>	July 2017
AIM Workshop, San Jose <i>Workshop on Functoriality and the Trace Formula</i>	Dec 2017
Montreal-Toronto Workshop in Number Theory, CRM <i>Workshop on Unitary Shimura Varieties</i>	January 2018
Arizona Winter School, Tucson <i>Winter school on Iwasawa Theory</i>	March 2018

PIMS Focus Period, UBC Vancouver <i>Focus Period on Representations in Arithmetic</i>	March 2018
Upstate Number Theory Conference, SUNY Buffalo <i>Young Researchers Conference</i>	April 2018
Strength in Numbers, Queen's University <i>Graduate Student Conference, Contributed talk</i>	May 2018
CTNT Summer School, University of Connecticut <i>Summer School and Conference</i>	May 2018
CNTA Conference, Universite Laval <i>Contributed talk</i>	July 2018
Montreal-Toronto Workshop in Number Theory, CRM <i>Workshop on p-adic Hodge Theory</i>	March 2019
John H. Barrett Memorial Lectures, University of Tennessee <i>participant</i>	May 2019
Analytic & Combinatorial Number Theory, UIUC <i>Contributed talk</i>	June 2019
SOGMSC, University of Guelph <i>Contributed talk</i>	June 2019
Boston University-Keio University Workshop <i>Contributed talk</i>	June 2019
Palmetto Number Theory Seminar (PANTS) XXXII <i>Invited talk</i>	Sep 2019
Maine-Quebec Number Theory Conference <i>Contributed talk</i>	October 2019
MAAIM, Emory University <i>Contributed talk</i>	Nov 2019
CMS Mini-Course on Iwasawa Theory <i>Co-organizer with R. Sujatha</i>	Dec 2019
CTNT Conference, University of Connecticut <i>Contributed talk slides</i>	June 2020
Maine-Quebec Number Theory Conference <i>Contributed talk slides video</i>	Fall 2020
John's Hopkins Junior Number Theory Days <i>Invited Talk</i>	Dec 2020
AIM Workshop, Online <i>Workshop on Arithmetic Intersection Theory on Shimura Varieties</i>	Jan 2021
CMS Summer Meeting <i>Invited talk, Session: Algebraic Number Theory</i>	June 2021
PIMS-Germany School on Eigenvarieties <i>Participant</i>	2021

LEARNING SEMINARS ORGANIZED/ PARTICIPATED

Summer Learning Seminar on Modular Forms <i>Graduate Seminar, Department of Math, University of Toronto</i>	Summer 2017
Summer Learning Seminar on Galois Cohomology <i>Graduate Seminar, Department of Math, University of Toronto</i>	Summer 2017
Introduction to Automorphic Forms and Langlands Program <i>Graduate Seminar, Department of Math, University of Toronto</i>	Fall 2017
Learning Seminar on Classical Iwasawa Theory <i>Graduate Seminar, Department of Math, University of Toronto</i>	Fall 2017

Learning Seminar on Beyond Endoscopy <i>Graduate Seminar, Department of Math, University of Toronto</i>	2017-18
Learning Seminar on Etale Cohomology <i>Graduate Seminar, Department of Math, University of Toronto</i>	Winter 2018
Learning Seminar on Complex Multiplication <i>Graduate Seminar, Department of Math, University of Toronto</i>	Fall 2018
Learning Seminar on p-adic Lie Groups <i>Graduate Seminar, Department of Math, University of Toronto</i>	Summer 2019
Learning Seminar on Tate Conjectures <i>Graduate Seminar, Department of Math, University of Toronto</i>	Fall 2019
Learning Seminar on Abelian ℓ-Adic Representations <i>Graduate Seminar, Department of Math, University of Toronto</i>	Summer 2020
Learning Seminar on Euler system and Eisenstein congruences <i>Iwasawa Seminar, Department of Math, UBC Vancouver</i>	Fall 2020
CRM Women's Seminar <i>Part of the thematic program at CRM</i>	Fall 2020
Learning Seminar on Coleman Families of Modular Forms <i>Part of the thematic program at CRM webpage</i>	Fall 2020

TEACHING ASSISTANCE EXPERIENCE (UNIVERSITY OF TORONTO)

MAT223 (Linear Algebra) <i>Instructor: Mr. Sean Uppal</i>	Fall/Winter 2015 – 16
MAT235 (Multivariable Calculus) <i>Instructor: Dr. Nara Jung</i>	Fall/Winter 2018 – 19
MAT237 (Multivariable Calculus) <i>Instructor: Dr. Tyler Holden, Prof. Robert Gerrard</i>	Summer 2016, Fall/ Winter 2018 – 19
MAT240 (Linear Algebra for Math Specialists) <i>Instructor: Prof. Eckhard Meinrenken</i>	Fall 2016; Fall 2017
MAT246 (Concepts in Abstract Math) <i>Instructor: Dr. J Korman, Dr. H Soheil, Prof. F Murnaghan, Dr. D. Burbulla</i>	multiple times
MAT247 (Linear Algebra II for Math Specialists) <i>Instructor: Prof. Stephen Kudla</i>	Winter 2018
MAT315 (Elementary Number Theory) <i>Instructor: Prof. Henry Kim</i>	Winter 2020
MAT336 (Elements of Analysis) <i>Instructor: Dr. H Soheil</i>	Winter 2017
MAT401 (Polynomial Equations and Fields) <i>Instructor: Dr. Jonathan Korman</i>	Summer 2017

TEACHING EXPERIENCE

University of Toronto:

MAT188 (Linear Algebra)

Fall 2018

Course Coordinator: Dr. Dietrich Burbulla

MAT136 (Calculus II)

Winter 2019

Course Coordinator: Dr. Sarah Mayes-Tang

MAT136 (Calculus II)

Summer 2019

Course Coordinator along with Daniel Le and Abhishek Oswal

MAT237 (Multivariable Calculus)

Summer 2020

Course Coordinator along with Travis Ens, Armanpreet Pannu, and Ren Zhu

University of British Columbia (Vancouver):

MAT105 (Integral Calculus)

Winter 2021

Course Coordinator: Kegin Liu

SERVICE

*Refereed
for*

Annales Mathématiques du Québec

EXTRA-CURRICULAR ACTIVITIES

Outreach Committee, IISER Mohali

2013 - 2015

I was a student volunteer of the institute Outreach Committee and had made several presentations. Our main focus was to introduce topics of current scientific research to school teachers (of the Punjab Government school system) and bring out the connection between learning science and doing science. We also organized the Annual Science Day for school students in the tri-city area (Chandigarh-Panchkula-Mohali).

MGSA, UofT

2016 - 2020

I was an active member of the Mathematics Graduate Students' Association. For several years, I was a Graduate Planning Committee representative. In addition, for the academic year 2018-19, I was appointed the treasurer.

Math Outreach, UofT

2018-2020

I was a mentor for the high school mentor-ship program. I mentored Anna Krokhine for her research project on graph theory and combinatorics in 2018. In 2019, I mentored Maya Bozzo-Rey on her project on Benford's Law. In 2020, my student, Jennifer Wang explored questions from number theory.

Women in Math, Toronto Chapter

2019-2020

Female graduate students from schools in and around the Greater Toronto Area came together for WiM, Toronto Chapter in 2019. I was a part of the core team and a mentor for incoming graduate students.

SKILLS

Languages

Bengali (mother tongue)
English (fluent)
Hindi (fluent)

Software

L^AT_EX

REFERENCES

Available upon request