

# Debanjana Kundu

Curriculum Vitae

## PERSONAL DETAILS

*Birth* January 6, 1993  
*Address* Department of Mathematics, University of Toronto  
*Phone* (+1) 437-344-2592  
*Mail* dkundu@math.toronto.edu

## EDUCATION

<b>Class X</b> <i>CBSE (India)</i> 98.6% (Mathematics 99, Science 99, English 93)	2008
<b>Class XII</b> <i>CBSE (India)</i> 93.2% (Mathematics 98, Chemistry 95, Physics 91, English 94) (Top 1% in both class X and class XII.)	2010
<b>BS-MS Dual Degree</b> <i>Indian Institute of Science Education and Research, Mohali, India</i> CGPA 9.7	2010-2015
<b>MA PhD</b> <i>University of Toronto, Toronto, Canada</i> CGPA NA	2015-present

## PUBLICATIONS/ PREPRINTS

1. Perfect Powers that are Sums of Squares of an AP (with V. Patel)  
*pre-print available on arXiv, submitted*
2. Growth of Fine Selmer Groups in Infinite Towers  
*pre-print available upon request, submitted*
3. Growth of  $p$ -Fine Selmer Groups and  $p$ -Fine Shafarevich-Tate Group in  $\mathbb{Z}/p\mathbb{Z}$ -Extensions  
*pre-print available upon request, submitted*
4. On the Relation between Classical Iwasawa  $\mu = 0$  Conjecture and Coates-Sujatha Conjecture A  
*pre-print available upon request, submitted*
5. On an Analogue of Kida's Formula for Fine Selmer Groups  
*pre-print available upon request, submitted*
6. Structure of Fine Selmer Groups in  $p$ -adic Lie Extensions (with R. Sujatha)  
*pre-print available upon request, submitted*
7. Beyond Endoscopy via Trace Formula for  $GL(2, F)$  (with M. Emory, M. Espinosa-Lara, T.A. Wong) *in progress*

## FELLOWSHIPS

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

## SEMINARS/ PRESENTATIONS

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<b>Introduction to Game Theory</b> <i>Mathematics Club, IISER Mohali</i>	Aug 2012
<b>27 Lines on a Cubic</b> <i>Department Colloquium, IISER Mohali</i>	Nov 2013
<b>Proofs of Quadratic Reciprocity</b> <i>Department Colloquium, IISER Mohali</i>	April 2014
<b>Linear Groups- Malcev's Theorem and Selberg's Lemma</b> <i>IISER Mohali</i>	April 2014
<b>Principal L-Functions of the Linear Group</b> <i>Department of Math, University of Toronto</i>	August 2016
<b>Understanding the Rank Distribution Conjecture</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Nov 2016

<b>What is an Elliptic Curve?</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	April 2017
<b>Summer Learning Seminar on Modular Forms</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Summer 2017
<b>Summer Learning Seminar on Galois Cohomology</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Summer 2017
<b>Introduction to Automorphic Forms and Langlands Program</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Sep 2017
<b>Learning Seminar on Classical Iwasawa Theory</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Sep-Dec 2017
<b>Learning Seminar on Beyond Endoscopy</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	2017-18
<b>Learning Seminar on Etale Cohomology</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Winter 2018
<b>Learning Seminar on Complex Multiplication</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Fall 2018
<b>Fun with Tilings</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Fall 2018
<b>Learning Seminar on <math>p</math>-adic Lie Groups</b> <i>Graduate Seminar, Department of Math, University of Toronto</i>	Summer 2019
<b>Möbius Functions and Number Theory</b> <i>Math Camp, Department of Math, University of Toronto</i>	Summer 2019

## CONFERENCES, WORKSHOPS AND SUMMER SCHOOLS

<b>GANITA Conference, The Fields Institute</b> <i>participant</i>	June 13-16, 2016
<b>Summer Graduate School, MSRI</b> <i>Summer school on Introduction to Character Theory and the McKay Conjecture.</i>	July 11-22, 2016
<b>PIMS Summer School, UBC Vancouver</b> <i>Summer School on Representation Theory of Finite Groups</i>	July 27-30 2016
<b>Fields Medal Symposium, The Fields Institute</b> <i>participant</i>	November 1-4, 2016
<b>Montreal-Toronto Workshop in Number Theory, CRM Montreal</b> <i>Workshop on Mock Modular Forms</i>	December 8-9 2016
<b>5 Day Workshops at BIRS, Banff</b> <i>Workshop on Diophantine Approximation and Algebraic Curves</i>	July 2-7 2017
<b>Summer Graduate School, MSRI</b> <i>Summer school on Automorphic Forms and Langlands Program</i>	Jul 24-Aug 4, 2017
<b>AIM Workshop, San Jose</b> <i>Workshop on Functoriality and the Trace Formula</i>	December 4-8 2017
<b>Montreal-Toronto Workshop in Number Theory, CRM Montreal</b> <i>Workshop on Unitary Shimura Varieties</i>	January 13-14 2018

<b>Arizona Winter School, Tucson</b> <i>Winter school on Iwasawa Theory</i>	March 3-7 2018
<b>PIMS Focus Period, UBC Vancouver</b> <i>Focus Period on Representations in Arithmetic</i>	March 25-29 2018
<b>Upstate Number Theory Conference, SUNY Buffalo</b> <i>Young Researchers Conference</i>	April 28-29 2018
<b>Strength in Numbers, Queen's University</b> <i>Graduate Student Conference, Contributed talk</i>	May 11-12 2018
<b>CTNT Summer School, University of Connecticut</b> <i>Summer School and Conference</i>	May 28- June 3 2018
<b>CNTA Conference, Universite Laval</b> <i>Contributed talk</i>	July 9-13 2018
<b>Montreal-Toronto Workshop in Number Theory, CRM Montreal</b> <i>Workshop on <math>p</math>-adic Hodge Theory</i>	March 22-24 2019
<b>John H. Barrett Memorial Lectures, University of Tennessee</b> <i>participant</i>	May 28-30 2019
<b>Analytic &amp; Combinatorial Number Theory, UIUC</b> <i>Contributed talk</i>	June 06-09 2019
<b>SOGMSC, University of Guelph</b> <i>Contributed talk</i>	June 17 2019
<b>Boston University-Keio University Workshop</b> <i>Contributed talk</i>	June 24-28 2019
<b>Palmetto Number Theory Seminar (PANTS) XXXII</b> <i>Invited talk</i>	September 21-22 2019
<b>Maine-Quebec Number Theory Conference</b> <i>Contributed talk</i>	October 5-6 2019
<b>MAAIM, Emory University</b> <i>Contributed talk</i>	November 1-3 2019
<b>CMS Mini-Course on Iwasawa Theory</b> <i>Co-organizer with R. Sujatha</i>	December 6-9 2019

## **TEACHING ASSISTANCE EXPERIENCE (UNIVERSITY OF TORONTO)**

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<b>MAT223 (Linear Algebra)</b> <i>Instructor: Mr. Sean Uppal</i>	Fall/Winter 2015 – 16
<b>MAT235 (Multivariable Calculus)</b> <i>Instructor: Dr. Nara Jung</i>	Fall/Winter 2018 – 19

**MAT237 (Multivariable Calculus)**Summer 2016,  
Fall/ Winter  
2018 – 19*Instructor: Dr. Tyler Holden, Prof. Robert Gerrard***MAT240 (Linear Algebra for Math Specialists)**Fall 2016;  
Fall 2017*Instructor: Prof. Eckhard Meinrenken***MAT246 (Concepts in Abstract Math)**multiple  
times*Instructor: Dr. J Korman, Dr. H Soheil, Prof. F Murnaghan, Dr. D. Burbulla***MAT247 (Linear Algebra II for Math Specialists)**

Winter 2018

*Instructor: Prof. Stephen Kudla***MAT315 (Elementary Number Theory)**

Winter 2020

*Instructor: Prof. Henry Kim***MAT336 (Elements of Analysis)**

Winter 2017

*Instructor: Dr. H Soheil***MAT401 (Polynomial Equations and Fields)**

Summer 2017

*Instructor: Dr. Jonathan Korman***TEACHING EXPERIENCE  
(UNIVERSITY OF TORONTO)**

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**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***EXTRA-CURRICULAR ACTIVITIES**

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**Manthan**

2011 - 2012

*I was the editor-in-chief of Manthan, the IISER Mohali students' magazine.***Annual Science Day, IISER Mohali**

Feb 2012

*I was a part of the organizing committee of the Annual Science Day at IISER Mohali where we organized several quizzes, an elocution competition and displayed several scientific phenomena for school students in the tri-city (Chandigarh, Panchkula, Mohali).***Mathematics Club, IISER Mohali**

2012 - 2015

*I was an active member of the student-run Mathematics Club and over the years had given talks (to mathematical and general audience) on varied areas of mathematics. I was also an active member of the Annual Mathematics Weekend where we organized quizzes, mathematical treasure hunts, mathematical dumb charades and various other such activities.***Opportunity Cell, IISER Mohali**

2013 - 2015

*I was the student coordinator of the institute Opportunity Cell. Our main aim was to provide information and guidance related to summer/ winter internships, PhD positions and research oriented jobs.***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.*

**MGSA, UofT**

September  
2016 - present

*I am a member of the Mathematics Graduate Students' Association, in particular I am a Graduate Planning Committee representative. For the academic year 2018-19, I was appointed the treasurer.*

**Math Outreach, UofT**

Winter 2018/  
Winter 2019

*I am a mentor for the outreach 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.*

**Women in Math, Toronto Chapter**

2019-Present

*Female graduate students from schools in and around the Greater Toronto Area have come together for WiM, Toronto Chapter. I am a part of the core team and a mentor for incoming graduate students.*

## **SKILLS**

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<i>Languages</i>	Bengali (mother tongue)
	English (fluent)
	Hindi (fluent)
<i>Software</i>	L <sup>A</sup> T <sub>E</sub> X

## **REFERENCES**

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Available upon request