Debanjana Kundu
Curriculum Vitae

PERSONAL DETAILS

Birth	January 6, 1993
Address	PIMS, 4176-2207 Main Mall, Vancouver, BC, V6T 1Z4 Canada
Phone	(+1) 437-344-2592
Mail	dkundu@math.ubc.ca

EDUCATION

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   January 2021–
                                                         December 2022
PIMS PostDoc Fellow

PUBLICATIONS/ PREPRINTS

1. Growth of Fine Selmer Groups in Infinite Towers
   Canadian Mathematics Bulletin (2020) Volume 63 / Issue 4 pp. 921-936.

2. Growth of p-Fine Selmer Groups and p-Fine Shafarevich-Tate Group in $\mathbb{Z}/p\mathbb{Z}$-Extensions
   Journal of the Ramanujan Math Society (2021) Volume 36, No. 1.

3. Growth of Fine Selmer Groups in Uniform pro-p Extensions
   Annales Mathématiques du Québec (2021) Volume 45, pp. 347–362.

4. Perfect Powers that are Sums of Squares of an AP (with V. Patel)
   Rocky Mountain Journal of Mathematics (2021) Volume 51 / No. 3 pp. 933-949.

5. On an Analogue of Kida's Formula for Fine Selmer Groups
   Journal of Number Theory (2021) Volume 222; pp. 249-261.

6. Anticyclotomic μ-Invariants of Residually Reducible Galois Representations (with A. Ray)
   Journal of Number Theory (2022) Volume 234, pp. 476-498.

7. Statistics for Iwasawa Invariants of Elliptic Curves (with A. Ray)
   Transactions of the American Mathematical Society (2021) Volume 374/ Issue 11;
   pp. 7945–7965

8. Arithmetic Statistics and Non-Commutative Iwasawa Theory (with A. Lei and A. Ray)
   Documenta Mathematica (2022) Volume 27, pp. 89–149

9. On the fine Selmer groups of modular forms and duality (with J. Hatley, A. Lei, and J. Ray)
   accepted for publication (Ramanujan Journal)
   https://doi.org/10.1007/s11139-022-00560-w

10. Iwasawa Invariants for elliptic curves over $\mathbb{Z}_p$-extensions and Kida's Formula (with A. Ray)
    Forum Math. 34 (2022), no. 4, 945–967

11. Control Theorems of Fine Selmer Groups (with M. F. Lim)
    accepted for publication (Journal de Théorie des nombres de Bordeaux)

12. Non-vanishing modulo p of Hecke L-values over imaginary quadratic fields (with A. Lei) *pre-print available upon request, submitted*

13. Statistics for anticyclotomic Iwasawa invariants of elliptic curves (with J. Hatley and A. Ray) *pre-print available on arXiv, submitted*

14. Statistics for Iwasawa Invariants of Elliptic Curves II (with A. Ray) *pre-print available on arXiv, submitted*

15. Rank jumps and growth of Shafarevich–Tate groups for elliptic curves in $\mathbb{Z}/p\mathbb{Z}$-extensions (with L. Beneish and A. Ray) *pre-print available on arXiv, submitted*

16. Growth of p-parts of ideal class groups and fine Selmer groups in $\mathbb{Z}_q$-extensions with $p \neq q$ (with A. Lei) *preprint available upon request, submitted*

17. Cotorsion of anti-cyclotomic Selmer groups on average (with F. Sprung) *submitted*

18. λ-invariant stability in Families of Modular Galois Representations (with J. Hatley) *preprint available on arXiv, submitted*

19. Studying Hilbert's 10th problem via explicit elliptic curves (with A. Lei and F. Sprung) *preprint available on arXiv, submitted*

FELLOWSHIPS

INSPIRE Fellowship   2010–2015
Department of Science and Technology, Government of India
JNCASR Summer Fellowship   2012
JNCASR, India
DAAD WISE Scholarship   2013
Germany
IAS Summer Fellowship (not availed)   2013
Indian Academy of Sciences, India
MITACS Globalink Research Internship   2014
Canada

Rhodes Scholarship finalist (top 18)	Class of 2015
Oxford University, UK	
TIFR VSRP Fellowship	2015
TIFR, India	
BIGS Scholarship for Graduate Studies (not availed)	2015–2018
Hausdorff Center for Mathematics, Bonn, Germany	
MITACS Graduate Fellowship	2015–2018
Canada	
Vivekananda Graduate Award for International Students	2018–2019
University of Toronto	
General Motors Women in Mathematics and Science Award	2019–2020
University of Toronto	
Malcolm Slingsby Robertson Prize in Mathematics	2020
University of Toronto (best thesis award)	
CRM-ISM Postdoctoral Fellowship	Fall 2020
Université de Montréal	
PIMS Postdoctoral Fellowship	January 2021–December 2022
University of British Columbia, Vancouver	
IAS Summer Research Fellowship	Summer 2022
Institute of Advanced Study, New Jersey	

SEMINARS

Introduction to Game Theory	Aug 2012
Mathematics Club, IISER Mohali	
27 Lines on a Cubic	Nov 2013
Department Colloquium, IISER Mohali	
Proofs of Quadratic Reciprocity	April 2014
Department Colloquium, IISER Mohali	
Linear Groups- Malcev's Theorem and Selberg's Lemma	April 2014
IISER Mohali	
Principal L-Functions of the Linear Group	August 2016
Department of Math, University of Toronto	
Understanding the Rank Distribution Conjecture	Nov 2016
Graduate Seminar, Department of Math, University of Toronto	
What is an Elliptic Curve?	April 2017
Graduate Seminar, Department of Math, University of Toronto	
Fun with Tilings	Fall 2018
Graduate Seminar, Department of Math, University of Toronto	
Möbius Functions and Number Theory	Summer 2019
Math Camp, Department of Math, University of Toronto	
Pigeonhole Principle and its Applications	January 2020
Graduate Seminar, Department of Math, University of Toronto	
Iwasawa Theory and Pseudo-nullity Conjectures	January 2020
Invited talk, Algebra & Number Theory Seminar, Université Laval	
Iwasawa Theory of Fine Selmer Groups	January 2020
Invited talk, QVNTS, Montreal	

Overview of Iwasawa Theory	October 2020
Invited talk, Junior Number Theory Seminar, University of Toronto	
Iwasawa Theory of Fine Selmer Groups	November 2020
Invited talk, Fields Institute Number Theory Seminar video	
Iwasawa Theory of Fine Selmer Groups	February 2021
Invited talk, PIMS Online Colloquium	
Iwasawa Theory of Fine Selmer Groups	March 2021
Invited talk, Number Theory Seminar, University of Toronto	
Iwasawa Theory	Summer 2021
Invited lecture series (3 lectures), Seoul National University	
Iwasawa Theory and Arithmetic Statistics	June 2021
Invited talk, University of Göttingen	
Iwasawa Theory and Arithmetic Statistics	October 2021
Invited talk, Ohio State University	
Iwasawa Theory and Arithmetic Statistics	November 2021
Invited talk, Möbius ANT, CRM Montreal	
Iwasawa Theory and Arithmetic Statistics	November 2021
Invited talk, IISER Mohali Online Colloquium video	
Iwasawa Theory and Arithmetic Statistics	January 2022
Invited talk, Fields Institute Number Theory Seminar video	
Fine Selmer Groups, Modular Forms, and Duality	February 2022
Invited talk, Iwasawa Theory Virtual Seminar	
TBA	August 2022
Invited talk, HRI Allahabad, India	

CONFERENCES, WORKSHOPS AND SUMMER SCHOOLS

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

Strength in Numbers, Queen's University   May 2018
Graduate Student Conference, Contributed talk
CTNT Summer School, University of Connecticut   May 2018
Summer School and Conference
CNTA Conference, Universite Laval   July 2018
Contributed talk
Montreal-Toronto Workshop in Number Theory, CRM   March 2019
Workshop on p-adic Hodge Theory
John H. Barrett Memorial Lectures, University of Tennessee   May 2019
participant
Analytic & Combinatorial Number Theory, UIUC   June 2019
Contributed talk
SOGMSC, University of Guelph   June 2019
Contributed talk
Boston University-Keio University Workshop   June 2019
Contributed talk
PAlmetto Number Theory Seminar (PANTS) XXXII   Sep 2019
Invited talk
Maine-Quebec Number Theory Conference   October 2019
Contributed talk
MAAIM, Emory University   Nov 2019
Contributed talk
CMS Mini-Course on Iwasawa Theory   Dec 2019
Co-organizer with R. Sujatha
CTNT Conference, University of Connecticut   June 2020
Contributed talk slides
Maine-Quebec Number Theory Conference   Fall 2020
Contributed talk slides video
John's Hopkins Junior Number Theory Days   Dec 2020
Invited Talk notes video
AIM Workshop, Online   Jan 2021
Workshop on Arithmetic Intersection Theory on Shimura Varieties
Spring School towards a mod-p Langlands correspondence   April 2021
participant
CMS Summer Meeting   June 2021
Invited talk, Session: Algebraic Number Theory
Workshop on Arithmetic Statistics Problems   July 2021
Invitation-only Conference
Maine-Quebec Number Theory Conference   October 2021
Contributed talk
Women in Maths: Progress and Challenges, IIT Jodhpur   May 2022
Invited talk
Pair of Automorphic Workshops   August 2022
part of Castella–Liu research group
Special values of L-functions, Paderborn University (Germany)   March 2023
Invited talk

SEMINARS ORGANIZED/ PARTICIPATED

Summer Learning Seminar on Modular Forms *Graduate Seminar, Department of Math, University of Toronto*	Summer 2017
Summer Learning Seminar on Galois Cohomology *Graduate Seminar, Department of Math, University of Toronto*	Summer 2017
Introduction to Automorphic Forms and Langlands Program *Graduate Seminar, Department of Math, University of Toronto*	Fall 2017
Learning Seminar on Classical Iwasawa Theory *Graduate Seminar, Department of Math, University of Toronto*	Fall 2017
Learning Seminar on Beyond Endoscopy *Graduate Seminar, Department of Math, University of Toronto*	2017–18
Learning Seminar on Etale Cohomology *Graduate Seminar, Department of Math, University of Toronto*	Winter 2018
Learning Seminar on Complex Multiplication *Graduate Seminar, Department of Math, University of Toronto*	Fall 2018
Learning Seminar on p-adic Lie Groups *Graduate Seminar, Department of Math, University of Toronto*	Summer 2019
Learning Seminar on Tate Conjectures *Graduate Seminar, Department of Math, University of Toronto*	Fall 2019
Learning Seminar on Abelian ℓ-Adic Representations *Graduate Seminar, Department of Math, University of Toronto*	Summer 2020
Learning Seminar on Euler system and Eisenstein congruences *Iwasawa Seminar, Department of Math, UBC Vancouver*	Fall 2020
CRM Women's Seminar *Part of the thematic program at CRM*	Fall 2020
Learning Seminar on Coleman Families of Modular Forms *Part of the thematic program at CRM*	Fall 2020
Learning Seminar on Eigenvarieties *Iwasawa Seminar, Department of Math, UBC Vancouver notes*	Winter 2021
Learning Seminar on Quadratic Twists *Iwasawa Seminar, online*	Winter 2021
UBC Number Theory Seminar *Department of Mathematics, UBC Vancouver*	2021-present

TEACHING ASSISTANCE EXPERIENCE
(UNIVERSITY OF TORONTO)

MAT223 (Linear Algebra) *Instructor: Mr. Sean Uppal*	Fall/Winter 2015–16
MAT235 (Multivariable Calculus) *Instructor: Dr. Nara Jung*	Fall/Winter 2018–19
MAT237 (Multivariable Calculus) *Instructor: Dr. Tyler Holden, Prof. Robert Gerrard*	Summer 2016, Fall/Winter 2018–19
MAT240 (Linear Algebra for Math Specialists) *Instructor: Prof. Eckhard Meinrenken*	Fall 2016; Fall 2017

MAT246 (Concepts in Abstract Math) Multiple
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:
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 Dr. Daniel Le and Abhishek Oswal
MAT237 (Multivariable Calculus) Summer 2020
Course Coordinator along with Dr. Travis Ens, Armanpreet Pannu, and Dr. Ren Zhu
University of British Columbia (Vancouver):
MAT105 (Integral Calculus for Social Sciences and Commerce) Winter 2021
Course Coordinator: Prof. Keqin Liu
MAT152 (Linear Systems) Winter 2022
Course Coordinator: Prof. Kalle Karu

ACADEMIC SERVICES

Refereed for	Annales Mathématiques du Québec, Canadian Math Bulletin, Czechoslovak Mathematical Journal, Forum Mathematicum, Mathematika, The Ramanujan Journal, Documenta Math
Reviewer for	Mathematics Reviews

MENTORSHIP

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.*
Undergraduate Mentorship 2021–present
I have been supervising Adithya Chakravarty *(student at University of Toronto) for his Bachelor's (research) thesis on Iwasawa theory.*
Starting Jan 2022, I am supervising Vitthal Yelambase *(student at BITS Goa, India) for his Bachelor's project.*

OTHER SERVICES

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.

Outreach, UBC 2021
I was an adjudicator for MURC 2021. This is an undergraduate level multi-disciplinary research conference organized at UBC every year.

Panelist at MathPath July 2021
I was a panelist at the MathPath Summer Camp for middle school students talking about hardships faced as a female mathematician.

EDI Committee, UBC 2021-2022
I was a member of the Math Department Equity, Diversity and Inclusion Committee at UBC, Vancouver.

REFERENCES

Available upon request.