

# GUNJA SACHDEVA (she/her)

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## INTERESTS

Broad areas: Algebraic Number Theory, Representation Theory, Linear Algebra

Specifics: Automorphic representations and their  $L$ -functions, Representation theory of Lie Groups, Spectral theory of differential operators on locally symmetric spaces

## EXPERIENCE

**BITS Pilani, Goa Campus, India** Sep 2021 – present

Assistant Professor (Grade-I), Dept. of Mathematics

Research: Pure Mathematics Group

Teaching: Number Theory, Topology, Linear Algebra, Probability and Statistics

**Max Planck Institute for Mathematics, Bonn, Germany** Nov 2021 – Aug 2021

Postdoctoral Fellow, with [Günter Harder](#)

Research: Different notions of Iso-spectrality

**IISER Tirupati, India** Aug 2020 – Oct 2021

Postdoctoral Fellow, with [Arnab Mitra](#)

Research:  $p$ -adic Representation Theory

Teaching: Rings and Modules, Point-set Topology

**University of Vienna, Austria** Oct–Dec 2017 and Sep 2018

Visiting Researcher, with [Harald Grobner](#)

Research: Special values of  $L$ -functions

**TIFR Mumbai, India** Aug 2017 – Jul 2019

Postdoctoral Fellow, with [C.S. Rajan](#)

Research: Trace Formulae and its Application in Spectral Theory of Operators

**IISER Pune, India** Aug 2012 – Jul 2017

Teaching Assistant, Department of Mathematics

Teaching: Introduction to Proofs, Linear Algebra, Point-set Topology, Multivariable Calculus

## EDUCATION

**IISER Pune, India** Aug 2012 – Aug 2017

*Ph.D. in Mathematics*

(Thesis submitted: Apr 2017, defended: Aug 2017)

Thesis: *Critical values of  $L$ -functions for  $GL(3) \times GL(1)$  over a number field*

► [www](#)

Supervisor: [A. Raghuram](#)

**DEI Deemed to be University, Agra, India** Dec 2009 – Dec 2011

*Integrated M.Sc.–M.Phil. in Mathematics (GPA: 9.71/10; University medalist)*

Thesis: *Study of Topological Invariants in terms of Regular Open-sets*

Supervisor: Gunjan Agarwal

**DEI Deemed to be University, Agra, India** Aug 2008 – Jul 2012

*B.Sc. Hons. in Mathematics (Percentage: 85.2; University medalist)*

Major courses: Mathematics, Physics, Chemistry

## SELECTED HONORS & AWARDS

Rank: 3 in the country in GATE for Mathematics	2012
Qualified Written Exam conducted by NBHM	2012
Rank: 165 in the country in JAM for Mathematics	2010
Rank-1 (Director's Medal) in M.Phil. Mathematics, at DEI, Agra	2012
Rank-1 (Director's Medal) in M.Sc. Mathematics, at DEI, Agra	2011
Rank-1 (Director's Medal) in B.Sc. Mathematics, at DEI, Agra	2008
Prizes in various sports event during my studies	2006 – 2011
Participation in NSS Camp for one week, at DEI Agra	2006

## RESEARCH GRANTS

1. G. Sachdeva (PI): Research Initiation Grant; Received funding of INR 200,000 from BITS Pilani Goa Campus for Jul 2022 – Jul 2023.

## REFEREED PUBLICATIONS

1. G. Sachdeva (with H. Grobner), “Relations of rationality for special values of Rankin-Selberg  $L$ -functions of  $GL(n) \times GL(m)$  over CM-fields”, *Pacific Journal of Mathematics*, 2022, DOI: [10.2140/pjm.2020.308.281](https://doi.org/10.2140/pjm.2020.308.281).
2. G. Sachdeva, “Critical values of  $L$ -functions for  $GL(3) \times GL(1)$  and symmetric square  $L$ -functions for  $GL(2)$  over a CM field”, *Journal of Number Theory*, 2020, DOI: [10.1016/j.jnt.2019.10.013](https://doi.org/10.1016/j.jnt.2019.10.013).
3. G. Sachdeva (with A. Raghuram), “Critical values of  $L$ -functions for  $GL(3) \times GL(1)$  over a totally real field”, in  *$L$ -functions and Automorphic forms, Contrib. Math. Comp. Sci.*, 2017, DOI: [10.1007/978-3-319-69712-3\\_12](https://doi.org/10.1007/978-3-319-69712-3_12).

## PREPRINTS

1. G. Sachdeva (with H. Mukherjee), “On the Linear Algebraic Monoids Associated to Congruence of Matrices”, *arXiv*, 2023, DOI: [10.48550/arXiv.2305.13958](https://doi.org/10.48550/arXiv.2305.13958).
2. G. Sachdeva (with C. Bhagwat), “Results on strong multiplicity one theorem”, *arXiv*, 2022, DOI: [10.48550/arXiv.2210.00303](https://doi.org/10.48550/arXiv.2210.00303).

## INVITED TALKS

1. Talk: “Special values of  $L$ -functions”, February 9, 2021, at Mathematics and Statistics department IIT Tirupati (online).
2. Invited to talk at the 3rd Chennai-Tirupati Number Theory Conference, August 26-28, 2020, at IIT Madras (online).

## SELECTED PRESENTATIONS

1. “An Automorphic translation of Deligne’s conjecture: Special values of  $L$ -function attached to an automorphic representation of  $GL(N)$  over a number field”, on January 27, 2021, at MPIM Bonn, Germany.
2. Talked at the conference Women in Automorphic forms, September 5-7, 2018, at Technical University, Darmstadt, Germany.
3. Colloquium talk: “An Automorphic translation of Deligne’s conjecture: Special values of  $L$ -functions for  $GL(n) \times GL(m)$  over a number field”, April 2018, at TIFR Mumbai.

4. “Special values of  $L$ -functions for  $GL(3) \times GL(1)$  over a number field” at the University of Vienna, Austria, in October 2017.
5. “Special values of  $L$ -functions on  $GL(3) \times GL(1)$  in the 31st Automorphic Forms Workshop, March 6-9, 2017, held at East Tennessee state university, Tennessee, USA.
6. “Critical values of  $L$ -functions on  $GL(3) \times GL(1)$  at IISER, Bhopal in the conference on Modular forms, September 4, 2016.
7. IISER-Pune Mathematics Symposium talk: “On Special values of  $L$ -functions on  $GL(3) \times GL(1)$  over totally real field”, August 11-12, 2016.
8. Seminar talk: “On Weak and Strong Approximation theorem for any global field  $k$ ”, in April 2015, at IISER Pune.
9. Seminar Talk: “On Explicit Deterministic Constructions for Membership in the Bitprobe Model”, in January 2014, at IISER Pune.

### SELECTED PARTICIPATIONS

1. Attended Level 2 of the Mathematics Training and Talent Search Programme (MTTS) at RIE, Mysore, in 2010.
2. Attended Visiting Students Research Program held at TIFR, Mumbai, in the Summer of 2010.
3. Conference on Zero and related topics in Number theory, during July 25 - 26, 2016, organized with the cooperation of National Mathematics Initiative (NMI), IISc Bengaluru.
4. Number Theory Conference on Arithmetic Geometry and  $L$ -functions, In honor of Prof. V Kumar Murty, KSOM, Kozhikode, 17-21 August 2016.
5. Attended one day conference on Modular forms, IISER-Bhopal, September 2016.
6. Pune-Mumbai Number theory seminar, held at TIFR, Mumbai, 16-17 September 2016.
7. Active participation in all the National and International Number theory events at IISER, Pune.
8. Attended 31st Annual Workshop on Automorphic Forms and Related Topics, held at East Tennessee State University in Johnson City, TN, 6-9 March 2017.
9. Attended conference on Women in automorphic forms, held at the University of Darmstadt, 5-7 September 2018.

### PERSONAL DETAILS

<b>DOB</b>	November 12, 1989
<b>Citizenship</b>	Indian
<b>Languages</b>	English, Hindi, Sindhi
<b>Postal Address</b>	D-93 BITS Pilani, Goa Campus Goa 403726, India

### REFERENCES

Available upon request.