

Bharathwaj Palvannan

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01 EMPLOYMENT AND EDUCATION

- 2021–
 - ♦ **Assistant Professor**
Indian Institute of Science, Bangalore, India
- 2019–2021
 - ♦ **Postdoctoral Fellow**
National Center for Theoretical Sciences, Taipei, Taiwan
- 2016–2019
 - ♦ **Hans Rademacher Instructor (postdoc)**
University of Pennsylvania, Philadelphia, USA
- 2010–2016
 - ♦ **Ph.D. in Mathematics**
University of Washington, Seattle, USA
Advisor: Ralph Greenberg
- 2006–2010
 - ♦ **B.Tech. in Engineering Physics**
Indian Institute of Technology Bombay, India

02 PUBLICATIONS AND PREPRINTS

- 1** **Modularity theorems for Eisenstein congruences in prime-power level** (with Jaclyn Lang and Katharina Müller), 2026.
[arXiv:2608.20125](#);
- 2** **A new perspective on the rank of Mazur’s Eisenstein Hecke algebra** (with Jaclyn Lang and Katharina Müller), 2026.
[arXiv:2605.04195](#).
- 3** **A minimal modularity lifting theorem for Siegel modular forms** (with Shaunak Deo), 2026.
[arXiv:2607.13100](#).
- 4** **On local characterizations of Hida families of Siegel modular forms** (with Shaunak Deo), 2026.
[arXiv:2602.20737](#).
- 5** **On the congruence ideal associated to p -adic families of Yoshida lifts** (with Ming-Lun Hsieh), (2026).
accepted for publication at the Journal of the Institute of Mathematics of Jussieu [arXiv:2505.09975](#).
- 6** **An ergodic approach towards an equidistribution result of Ferrero–Washington** (with Jungwon Lee).
Journal de Théorie des Nombres de Bordeaux (2024).
- 7** **On computing the Newton polygons of plus and minus p -adic L -functions** (with Sai Sanjeev Balakrishnan and Antonio Lei).
Involve (2024).

- 8 Codimension two cycles in Iwasawa theory and tensor product of Hida families** (with Antonio Lei).
Mathematische Annalen (2022).
- 9 Codimension two cycles in Iwasawa theory and elliptic curves with supersingular reduction** (with Antonio Lei).
Forum of Mathematics, Sigma (2019).
- 10 On free resolutions of Iwasawa modules** (with Alexandra Nichifor).
Documenta Mathematica (2019).
- 11 Height one specializations of Selmer groups.**
Annales de l'Institut Fourier (2019).
- 12 On Selmer groups and factoring p -adic L -functions.**
International Mathematics Research Notices (2018).

03 STUDENT SUPERVISION

Aug 2025–	◆ Sachin Shukla Indian Institute of Science · current Ph.D. student
Aug 2024–	◆ Vyshnav V Indian Institute of Science · current Ph.D. student
Aug 2025– Apr 2026	◆ Anmol Indian Institute of Science · two Masters projects Masters project on <i>Open image theorem of Serre</i> and <i>Semi-stable reduction theorem for elliptic curves</i>
Jan–Apr 2026	◆ Adhavan S. V. Indian Institute of Science · Masters project Masters project on <i>Moduli space of elliptic curves</i>
Aug 2023– Jan 2024	◆ Mahesh Garg Indian Institute of Science · one-year PMRF fellow working on <i>Generalizations of Sharifi's conjecture to the Rankin–Selberg setting</i> Currently a Ph.D. student at the University of California, Santa Barbara
Jan–Apr 2024	◆ Sakjit Das Indian Institute of Science · undergraduate thesis on <i>Modular curves and modular forms</i>
Jan–Apr 2023	◆ Suryansh Shrivastava Indian Institute of Science · undergraduate thesis on <i>Formalizing the proof of Stickelberger's theorem on Lean</i>
Summer 2022	◆ Niranjan Kumar, Chennai Mathematical Institute Indian Institute of Science · reading project on Caroline Series' paper <i>The modular surface and continued fractions</i>
Mar 2018	◆ Arizona Winter School on Iwasawa Theory University of Arizona · study group guide for John Coates's study group on the <i>Weak Leopoldt conjecture</i>

Spring 2018	◆ Weichen Zhou University of Pennsylvania · Masters thesis on <i>Elliptic curves over $\mathbb{C}$ with complex multiplication</i>
Summer 2017	◆ Andrea Thevis University of Pennsylvania · Masters thesis on <i>Elliptic curves and cryptography</i>
Fall 2017	◆ Yao-Rui Yeo University of Pennsylvania · independent study on <i>Galois representations</i>

04 TEACHING

◆ Indian Institute of Science

Aug–Oct 2026	◆ NPTEL (8 weeks): Commutative Algebra with a viewpoint towards Algebraic Number Theory
Aug–Dec 2026	◆ MA 312: Commutative Algebra
Aug–Dec 2026	◆ MA 313: Algebraic Number Theory
Aug–Dec 2025	◆ MA 312: Commutative Algebra
Aug–Dec 2024	◆ UM 101: Analysis and Linear Algebra I
Jan–Apr 2024	◆ MA 358: Topics in Number Theory 2 <i>p-adic L-functions</i>
Aug–Dec 2023	◆ MA 212: Algebra I
Jan–Apr 2023	◆ MA 224: Complex Analysis
Aug–Dec 2022	◆ MA 313: Algebraic Number Theory

◆ University of Pennsylvania

Fall 2018, Fall 2016	◆ Math 104: Calculus I Volumes of revolution, integration techniques, Taylor series
Fall 2018, Spring 2017	◆ Math 240: Calculus III Introduction to linear algebra and ODEs
Spring 2019	◆ Math 350: Undergraduate Number Theory
Spring 2018	◆ Math 312: Linear Algebra
Spring 2018	◆ Math 621: Algebraic Number Theory (graduate) Good Teaching Award
Fall 2017	◆ Math 620: Algebraic Number Theory (graduate)
Fall 2016	◆ Math 420: Ordinary differential equations

◆ University of Washington

Spring 2016	◆ Math 307: Ordinary differential equations Instructor
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- 2014–2015 ♦ **Math 308: Matrix Algebra with applications**
Instructor · Summer 2015, Winter 2015, Spring 2014, Winter 2014
- Summer 2013 ♦ **Math 300: Introduction to mathematical reasoning**
Instructor
- ♦ **Teaching assistant for various undergraduate calculus courses**

05 CONFERENCE ORGANISATION

- Apr 2024 ♦ **Number Theory Day in Bangalore**
IISc · with Shaunak Deo
- Nov 2022 ♦ **An in-house postdoc and student symposium**
IISc · with Gautam Bharali and Purvi Gupta
- Nov 2020 ♦ ***L*-values and Iwasawa theory**
Online · with Ashay Burungale, Ming-Lun Hsieh and Sujatha Ramdurai

06 PROFESSIONAL SERVICE

- ♦ **Referee reports and quick opinions**
Algebra and Number Theory, Canadian Mathematical Bulletin, Forum of Mathematics Sigma, Glasgow Mathematical Journal, International Mathematics Research Notices, International Journal of Number Theory, Journal of the Ramanujan Mathematical Society, Nagoya Mathematical Journal, Proceedings of the American Mathematical Society, Research in Mathematical Sciences, Research in Number Theory, Selecta Mathematica, Taiwanese Journal of Mathematics