

# Bharathwaj Palvannan

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## Employment

- 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.

## Education

- 2010-2016 **PhD in Mathematics**, *University of Washington*, Seattle, USA.  
Advisor: Ralph Greenberg
- 2006-2010 **B.Tech in Engineering Physics**, *Indian Institute of Technology Bombay*, India.

## Papers and Preprints

- An ergodic approach towards an equidistribution result of Ferrero–Washington.**  
with Jungwon Lee, submitted (2022)
- Codimension two cycles in Iwasawa theory and tensor product of Hida families.**  
with Antonio Lei, accepted for publication in *Mathematische Annalen* (2022)
- Codimension two cycles in Iwasawa theory and elliptic curves with supersingular reduction.**  
with Antonio Lei, *Forum of Mathematics, Sigma* (2019)
- On free resolutions of Iwasawa modules.**  
with Alexandra Nichifor, *Documenta Mathematica* (2019)
- Height one specializations of Selmer groups.**  
*Annales de l'Institut Fourier* (2019)
- On Selmer groups and factoring  $p$ -adic  $L$ -functions.**  
*International Mathematics Research Notices* (2018)

## Conference organization

- Nov 2022 **An in-house postdoc+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.

## Student supervision

- Summer 2022 **Niranjan Kumar from Chennai Mathematical Institute**, *Indian Institute of Science*,  
Reading project on Caroline Series' paper *The modular surface and continued fractions*.
- March 2018 **Arizona Winter School on Iwasawa Theory**, *University of Arizona*,  
Study group guide for John Coates's study group on the *Weak Leopoldt conjecture*.
- Spring 2018 **Weichen Zhou**, *University of Pennsylvania*,  
Masters thesis on *Elliptic curves over  $\mathbb{C}$  with complex multiplication*.
- Summer 2017 **Andrea Thevis**, *University of Pennsylvania*,  
Masters thesis on *Elliptic curves and cryptography*.
- Fall 2017 **Yao-Rui Yeo**, *University of Pennsylvania*,  
Ind. Study on *Galois representations*.

## Short term visits

- May 2022 **University of Warwick**, *UK*,  
visiting Jungwon Lee.
- Oct 2019 **Oberwolfach Leibniz Fellowship at MFO Oberwolfach**, *Germany*.
- Aug 2018 **Research in Pairs at MFO Oberwolfach**, *Germany*.  
with Marc Masdeu and Chris Williams
- June 2018 **Universität Duisburg-Essen**, *Germany*.  
visiting Andreas Nickel
- Mar 2018 **Université Laval**, *Canada*.  
visiting Antonio Lei

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## Teaching at the Indian Institute of Science

Math 224: Complex Analysis,

Jan-Apr 2023.

Math 313: Algebraic Number Theory,

Aug-Dec 2022.

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## Teaching at the University of Pennsylvania

Math 104: Calculus I,

(Volumes of revolution, Integration techniques, Taylor series)

Fall 2018, Fall 2016.

Math 240: Calculus III ,

(Introduction to Linear algebra and ODEs)

Fall 2018, Spring 2017.

Math 312: Linear Algebra,

Spring 2018.

Math 350: Undergraduate Number Theory,

Spring 2019.

Math 420: Ordinary differential equations,

Fall 2016.

(graduate) Math 620: Algebraic Number Theory,

Fall 2017.

(graduate) Math 621: Algebraic Number Theory (Good Teaching Award),

Spring 2018.

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## Teaching at the University of Washington

Math 307: Ordinary differential equations (Instructor),

Spring 2016.

Math 308: Matrix Algebra with applications (Instructor),

Summer 2015, Winter 2015, Spring 2014, Winter 2014.

Math 300: Introduction to mathematical reasoning (Instructor),

Summer 2013.

Teaching assistant for various undergraduate calculus courses.

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## Invited Talks

Nov 2022 Random Geometry colloquium, Tata Institute of Fundamental Research (Mumbai), India.

Aug 2022 Conference: Elliptic curves and special values of  $L$ -functions, ICTS, India.

April 2022 Science Seminar, Azim Premji University, India.

January 2022 Number Theory Seminar, Indian Institute of Science, India.

Sept 2021 Philadelphia Area Number Theory Seminar, Bryn Mawr, USA.

Dec 2020 Seminar on Geometry and Arithmetic, UC Santa Barbara, USA.

August 2020 Algebra and Combinatorics Seminar, Indian Institute of Science, India.

July 2020 Colloquium, Tata Institute of Fundamental Research (Mumbai) India.

Feb 2020 Number Theory seminar, Seoul National University, South Korea.

Jan 2020 Galois seminar, University of Pennsylvania, USA.

Nov 2019 Taipei Postdoc seminar, Academia Sinica / NCTS, Taiwan.

July 2019 Algebra and Number Theory seminar, Universität des Saarlandes, Germany.

Apr 2019 Pizza seminar for graduate students, University of Pennsylvania, USA.

Apr 2019 AMS Sectional Meeting, University of Connecticut (Hartford), USA,  
Special session on Special values of  $L$ -functions and arithmetic invariants in families.

Mar 2019 Algebra-Number Theory seminar, University of Maryland, USA.

Mar 2019 Columbia-CUNY-NYU Joint Number Theory Seminar, Courant Institute, USA.

Oct 2018 Number theory seminar, Université Laval, Canada.

June 2018 Oberseminar, Universität Duisburg-Essen (Essen), Germany.

May 2018 The Bielefeld Arithmetic Geometry Seminar, Universität Bielefeld, Germany.

May 2018 Workshop: Iwasawa Theory and Related Topics, University of Heidelberg, Germany.

May 2018 Number theory seminar, University of Illinois (Chicago), USA.

Nov 2017 Quebec Vermont Number theory seminar, Concordia University, Canada.

Sept 2017 Number theory seminar, Univeristy of British Columbia, Canada.

Sept 2017 Algebra seminar, University of Pennsylvania, USA.

Mar 2017 Number theory seminar, Université Laval, Canada.

Jan 2017 Philadelphia Area Number Theory Seminar, Bryn Mawr, USA.

Jun 2016 Workshop: New Directions in Iwasawa theory, Banff Research Center, Canada,  
Video link: <https://goo.gl/EksZ2s>.

Apr 2016 Galois seminar, University of Pennsylvania, USA.

Jan 2016 Number theory seminar, University of California Los Angeles, USA.

Nov 2015 Number theory seminar, University of Arizona, USA.

Oct 2014	<b>Number theory seminar,</b>	<i>University of Washington USA.</i>
Sept 2014	<b>Number theory seminar,</b>	<i>IIT Bombay, India.</i>

### Contributed Talks

Mar 2021	<b>Spring Day 2021,</b>	<i>NCTS, Taiwan.</i>
Sept 2020	<b>CRM Members seminar,</b>	<i>CRM, Canada.</i>
June 2020	<b>Spring Day 2020,</b>	<i>NCTS, Taiwan.</i>
Oct 2018	<b>Maine/Québec Number theory conference,</b>	<i>Université Laval, Canada.</i>
Oct 2016	<b>Maine/Québec Number theory conference,</b>	<i>Université Laval, Canada.</i>
Mar 2016	<b>30th Automorphic forms workshop,</b>	<i>Wake Forest University, USA.</i>
Oct 2015	<b>Midwest Number theory conference,</b>	<i>University of Illinois Chicago, USA.</i>
Sept 2015	<b>Boston-Keio workshop,</b>	<i>Boston University USA.</i>

### Awards and Fellowships

declined due to covid	<b>Simons CRM Scholar,</b>	<i>CRM, Canada.</i>
Oct 2019	<b>Oberwolfach Leibniz Fellow,</b>	<i>MFO Oberwolfach, Germany.</i>
Aug 2018	<b>Research in Pairs,</b> with Marc Masdeu and Chris Williams	<i>MFO Oberwolfach, Germany.</i>
Summer 2018	<b>US Junior Oberwolfach Fellow,</b>	<i>MFO Oberwolfach, Germany.</i>
Spring 2018	<b>Good Teaching Award,</b> Math 621 Algebraic Number Theory	<i>University of Pennsylvania.</i>
Spring 2013	<b>Robert and Elaine Phelps fellowship,</b>	<i>University of Washington.</i>
2003	<b>International Math. Olympiad (IMO) Training camp,</b>	<i>HBCSE, India.</i>

### Departmental services

2022	<b>Reading seminars,</b> Organized reading seminars on works of (i) Rationality of Dedekind-Zeta values following Sczech and Shintani, and (ii) Construction of $p$ -adic $L$ -functions for real quadratic fields (the method of Charollois–Dasgupta) following the AWS notes of Dasgupta–Greenberg.	<i>Indian Institute of Science,</i>
2017-2019	<b>Preliminary examination committee,</b>	<i>University of Pennsylvania.</i>
2017-2019	<b>Transfer credit committee,</b>	<i>University of Pennsylvania.</i>
2016-2017	<b>Advanced Placement/Make-Up Exam,</b>	<i>University of Pennsylvania.</i>
2016-2017	<b>Undergraduate Committee,</b>	<i>University of Pennsylvania.</i>
2013, 2014	<b>Graduate TA mentor,</b> Facilitated the TA training program and mentored 5 incoming graduate students both in Fall 2013 and Fall 2014.	<i>University of Washington,</i>
2014, 2015	<b>Reading seminar for graduate students,</b> Organized reading seminars for graduate students on (i) $p$ -divisible groups and (ii) Galois representations and étale cohomology.	<i>University of Washington,</i>