

PAK-HIN LEE

CURRICULUM VITAE

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CONTACT AND PERSONAL INFORMATION

- **Mailing Address:**
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RESEARCH INTERESTS

- Number theory and related areas of automorphic forms and arithmetic geometry

EMPLOYMENT

- **University of Warwick** (Coventry, United Kingdom) 12/2019 – present
 - ◆ Research Fellow in Number Theory
Mentor: David Loeffler

EDUCATION

- **Columbia University** (New York, NY, United States) 09/2012 – 10/2019
 - ◆ Ph.D. in Mathematics, 2019
Thesis Advisor: Eric Urban
 - ◆ M.Phil. in Mathematics, 2016
 - ◆ M.A. in Mathematics, 2014
- **Stanford University** (Stanford, CA, United States) 09/2008 – 06/2012
 - ◆ B.S. in Mathematics, 2012
Graduated with Departmental Honors and University Distinction.

AWARDS AND HONORS

- Croucher Fellowship for Postdoctoral Research, Croucher Foundation 2019 – 2021
- Dean's Fellow, Graduate School of Arts and Sciences, Columbia University 2012 – 2019
- J. E. Wallace Sterling Award for Scholastic Achievement, Stanford University 2012
 - ◆ Top 25 graduating seniors in the School of Humanities and Sciences
- Honorable Mention, The 71st William Lowell Putnam Mathematical Competition 2010
- Nominee, Boothe Prize for Excellence in Writing, Stanford University 2009
- Sir Edward Youde Memorial Scholarship for Overseas Studies 2008 – 2011
- Silver Medal, The 48th International Mathematical Olympiad (IMO) 2007
- HKSAR Government Scholarship 2007

PUBLICATIONS AND PREPRINTS

- On the p -adic interpolation of Asai residues for $GL(n)$ (with D. Barrera Salazar and C. Williams)
In preparation
- On p -adic adjoint L -functions for Bianchi modular forms (with J.-F. Wu)
In preparation
- A p -adic L -function for non-critical adjoint L -values
Submitted (2022)
- Parity of the partition function and traces of singular moduli (with A. Zamorzaev)
Int. J. Number Theory 8 (2012), no. 2, 395–409

RESEARCH TALKS GIVEN

- ***A p -adic L -function for non-critical adjoint L -values***
 - ♦ Seminario: Funtorialidad de Langlands y deformación p -ádica, Universidad de Santiago de Chile 10/2022
 - ♦ Number Theory Seminar, University of Sheffield 05/2020
 - ♦ Number Theory Seminar, University of Warwick 05/2020
 - ♦ London–Warwick Euler Systems Seminar, University of Warwick 01/2020
- ***Parity of the partition function and traces of singular moduli***
 - ♦ Analytic Number Theory Seminar, Stanford University 12/2010

EXPOSITORY TALKS GIVEN

- **Study Groups at University of Warwick**
 - ♦ *Higher Coleman theory for GL_2* 11/2022
Study group on higher Hida and Coleman theories
 - ♦ *General Shimura varieties* 06/2021
Study group on Shimura varieties
 - ♦ *Topology of adic spaces* [2 lectures] 05/2020
Study group on adic spaces
- **London Number Theory Study Groups**
 - ♦ *Bloch–Kato conjecture for Artin motives* 03/2021
Study group on the Bloch–Kato conjecture
 - ♦ *p -adic L -functions for GSp_4* 12/2020
Study group on higher Hida and Coleman theories
- **Graduate Learning Seminars and Topics Courses at Columbia University**
 - ♦ *Lambda-adic modular forms and Lambda-adic Galois representations* [4 lectures] 09/2017 – 10/2017
Graduate student seminar on Hida theory
 - ♦ *The Ax–Sén–Tate theorem and Hodge–Tate representations* [2 lectures] 05/2017
Graduate student seminar on the Mordell conjecture
 - ♦ *Overview of the Langlands conjectures* [3 lectures] 01/2017 – 03/2017
Graduate student seminar on the Langlands program
 - ♦ *A smooth linear partial differential equation without solutions* 12/2016
Graduate student seminar on geometric analysis

- ◆ *Proof of Perrin-Riou's main theorem on p -adic Euler–Iwasawa systems* 12/2016
Research seminar on Euler systems
- ◆ *The Riemann–Roch theorem for number fields* 04/2016
Graduate student seminar on algebraic number theory
- ◆ *p -adic Galois representations and differential equations (after L. Berger) [3 lectures]* 02/2016
Research seminar on (ϕ, Γ) -modules
- ◆ *Overconvergent modular symbols and Stevens' classicality theorem* 10/2015
Graduate student seminar on p -adic L -functions
- ◆ *On a rigidity result of Chai on Hecke-invariant subvarieties [2 lectures]* 04/2015
Topics course on non-vanishing results of special values of L -functions
- ◆ *Compact operators on p -adic Banach spaces* 03/2014
Research seminar on p -adic families of automorphic forms
- ◆ *Local Howe duality* 10/2013
Graduate student seminar on theta correspondence
- ◆ *Spectral sequences* 02/2013
Topics course on the cohomology of arithmetic groups
- **Undergraduate Seminars at Columbia University**
- ◆ *From cutting squares to combinatorics and 2-adics* 04/2018
Undergraduate Mathematics Seminar
- ◆ *Rational elliptic curves have no 11-torsion* 04/2016
Undergraduate Mathematics Seminar
- ◆ *Why is the Ramanujan constant almost an integer?* 10/2014
Undergraduate Mathematics Seminar
- ◆ *Dirichlet's theorem on primes in arithmetic progressions* 11/2012
Undergraduate Mathematics Seminar

CONFERENCES AND WORKSHOPS ATTENDED

- *Elliptic Curves and Modular Forms in Arithmetic Geometry* 09/2022
Università degli Studi di Milano (Milan, Italy)
- *School on Arithmetic Geometry on the occasion of Massimo Bertolini's 60th birthday* 09/2022
Universität Duisburg-Essen (Essen, Germany)
- *Galois Representations, Automorphic Forms and L -Functions* 06/2022
Centre International de Rencontres Mathématiques (Luminy, France)
- *Arizona Winter School 2022: Automorphic Forms Beyond GL_2* 03/2022
University of Arizona (Tucson, AZ, United States)
- *Automorphic p -adic L -functions and regulators* 10/2019
Université de Lille (Lille, France)
- *Arizona Winter School 2018: Iwasawa Theory* 03/2018
University of Arizona (Tucson, AZ, United States)
- *Recent Developments on the Arithmetic of Special Values of L -functions* 12/2017
Bernoulli Center, École Polytechnique Fédérale de Lausanne (Lausanne, Switzerland)
- *Workshop on Motives, Galois Representations and Cohomology Around the Langlands Program* 11/2017
Institute for Advanced Study (Princeton, NJ, United States)

- *Iwasawa 2017* 07/2017
University of Tokyo (Tokyo, Japan)
- *Graduate courses: p-adic methods for Galois representations and modular forms* 01/2017 – 02/2017
Barcelona Graduate School of Mathematics (Barcelona, Spain)
- *p-adic Methods in Number Theory* 05/2015
University of California, Berkeley (Berkeley, CA, United States)
- *Automorphic forms, Shimura varieties, Galois representations and L-functions* 12/2014
Mathematical Sciences Research Institute (Berkeley, CA, United States)
- *Introductory Workshop: New Geometric Methods in Number Theory and Automorphic Forms* 08/2014
Mathematical Sciences Research Institute (Berkeley, CA, United States)
- *Spring School on Classical and p-adic Hodge Theories* 05/2014
Centre Henri Lebesgue (Rennes, France)
- *Recent Advances in Hodge Theory: Period Domains, Algebraic Cycles, and Arithmetic* 06/2013
Pacific Institute for the Mathematical Sciences (Vancouver, BC, Canada)
- *p-adic Modular Forms, L-functions, and Galois Representations* 05/2013
University of California, Los Angeles (Los Angeles, CA, United States)
- *Algebraic Geometry Northeastern Series Spring 2013* 04/2013
Yale University (New Haven, CT, United States)
- *Arizona Winter School 2013: Modular Forms and Modular Curves* 03/2013
University of Arizona (Tucson, AZ, United States)

TEACHING AND RELATED EXPERIENCE

- **Thesis Supervision, University of Warwick**
 - ◆ Supervising three master's theses for the MMath and MSc degrees 10/2022 – present
 - ◆ Co-supervising one bachelor's thesis for the *Laurea Triennale* degree under ERASMUS 10/2022 – present
- **Lecturer, University of Warwick**
 - ◆ Taught Course Centre: *p*-adic Modular Forms 01/2021 – 03/2021
- **Instructor, Columbia University**
 - ◆ MATH UN1102: Calculus II 01/2019 – 05/2019
 - ◆ MATH S1202: Calculus IV 07/2018 – 08/2018
 - ◆ MATH UN1102: Calculus II 01/2018 – 05/2018
 - ◆ MATH S1202: Calculus IV 05/2017 – 06/2017
 - ◆ MATH S1202: Calculus IV 07/2016 – 08/2016
 - ◆ MATH S1202: Calculus IV 07/2015 – 08/2015
- **Teaching Assistant, Columbia University**
 - ◆ MATH GR6261: Commutative Algebra (Graduate-level) (Instructor: Eric Urban) 09/2018 – 12/2018
 - ◆ MATH UN1101: Calculus I (Instructor: Alisa Knizel) 09/2018 – 12/2018
 - ◆ Department Assistant for Summer Session 05/2018 – 06/2018
 - ◆ MATH GR6343: Lie Groups and Representations (Graduate-level) (Instructor: Eric Urban) 09/2017 – 12/2017
 - ◆ MATH GR6657: Class Field Theory (Graduate-level) (Instructor: Chao Li) 01/2017 – 05/2017
 - ◆ MATH GU4043: Algebraic Number Theory (Instructor: Chao Li) 09/2016 – 12/2016
 - ◆ MATH G4657: Class Field Theory (Graduate-level) (Instructor: Wei Zhang) 01/2016 – 05/2016

- ◆ MATH V1202: Calculus IV (Instructor: Bogwang Jeon) 09/2015 – 12/2015
- ◆ Summer Undergraduate Research: Arithmetic Properties of Hurwitz Numbers (Project Leader: David Hansen) 06/2015 – 08/2015
- ◆ MATH V2010: Linear Algebra (Instructor: Gabriele di Cerbo) 01/2015 – 05/2015
- ◆ MATH V3025: Making, Breaking Codes (Instructor: Dorian Goldfeld) 09/2014 – 12/2014
- ◆ MATH S1201: Calculus III (Instructor: Philip Engel) 05/2014 – 07/2014
- ◆ MATH V1101: Calculus I (Instructor: Anand Deopurkar) 01/2014 – 05/2014
- ◆ MATH V1202: Calculus IV (Instructor: Michael Woodbury) 09/2013 – 12/2013
- **Stanford University Mathematics Camp (SUMaC)**
 - ◆ Residential Counselor and Teaching Assistant for Program II (Algebraic Topology) 07/2014 – 08/2014
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 - ◆ Residential Counselor and Teaching Assistant for Program II (Algebraic Topology) 07/2012 – 08/2012
- **Stanford – Math League Tournament**
 - ◆ Residential Counselor for the Third Annual Tournament 08/2014
- **Course Grader, Stanford University**
 - ◆ Graded homework for courses on Real Analysis, Algebraic Number Theory, Calculus on Manifolds, and Functional Analysis. 09/2009 – 06/2012

SYNERGISTIC ACTIVITIES

- **Research seminar organization**
 - ◆ Co-organizing the Warwick Number Theory Seminar. 01/2022 – present
- **Learning seminar organization**
 - ◆ Organized four graduate learning seminars on advanced topics in number theory. 09/2016 – 05/2018
- **Assistance with undergraduate research**
 - ◆ Assisted an REU group of four undergraduate students led by David Hansen, on the arithmetic properties of Hurwitz numbers. 06/2015 – 08/2015
- **Compilation of lecture notes**
 - ◆ Live-TeXed and compiled lecture notes for numerous topics courses and seminars, which are shared publicly on my website. 01/2013 – 12/2018

EXTRA-CURRICULAR ACTIVITIES

- **Microsoft College Puzzle Challenge**
 - ◆ Member of runner-up team at Columbia University 04/2016
 - ◆ Member of winning team at Columbia University 04/2015
 - ◆ Member of runner-up team at Columbia University 04/2014
 - ◆ Member of winning team at Columbia University 04/2013
- **ACBL North American Collegiate Bridge Team Championship**
 - ◆ Member of runner-up team representing Stanford University 07/2012

COMPUTER SKILLS

- C++, Java, LaTeX, Mathematica, Pascal

LANGUAGES

- English (fluent), Cantonese Chinese (native), Mandarin Chinese (fluent)

