

CURRICULUM VITAE – JACLYN LANG

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RESEARCH INTERESTS Galois representations, modular forms, elliptic curves, p -adic interpolation, p -adic L -functions, motives

EMPLOYMENT **Temple University**, 2021 –
Assistant Professor

Oxford University, 2020 – 2021
Titchmarsh Research Fellow

Sorbonne Université Paris Nord, 2016 – 2017; 2018 – 2020
NSF Postdoctoral Research Fellow

Max Planck Institute for Mathematics, 2017 – 2018
Postdoctoral Fellow

EDUCATION **University of California, Los Angeles**, mathematics, Ph.D., 2016

University of Cambridge, pure mathematics, CASM, 2010

Bryn Mawr College, mathematics, B.A./M.A., 2009
summa cum laude, with honors in mathematics

HONORS
AND
AWARDS

AWM Travel Grant, 2022
to attend Banff workshop *Arithmetic Aspects of Deformation Theory*

Simons CRM Scholar, 2020 (postponed due to Covid-19 pandemic)
Centre de Recherches Mathématiques, Montréal

Fulbright U.S. Student Grant, 2016
up to 20/year nationally, Fulbright Commission of the U.S. State Department

NSF Mathematical Sciences Postdoctoral Research Fellowship, 2016
about 35/year nationally, National Science Foundation

Mathematical Sciences Foundation of Paris Postdoctoral Fellowship, 2016
about 8/year, Mathematical Sciences Foundation of Paris (declined)

Charles E. and Sue K. Young Graduate Student Award, 2015
4/year out of all UCLA graduate students, UCLA Graduate Division

Teaching Award, 2014
4/year out of UCLA math graduate teaching assistants, UCLA Department of Mathematics

Edward A. Bouchet Graduate Honor Society Inductee, 2014
5/year out of all graduate students at UCLA, UCLA Graduate Division

NSF Graduate Research Fellowship, 2010
2,000/year nationally, National Science Foundation

Eugene V. Cota Robles Fellowship, 2010
71/year out of all graduate students at UCLA, UCLA Graduate Division

Churchill Scholarship, 2009
14/year nationally, The Winston Churchill Foundation of the United States

PAPERS

Big images of two-dimensional pseudorepresentations, with A. Conti, A. Medvedovsky
Mathematische Annalen, 385 (2023) 1 – 95

A modular construction of unramified p -extensions of $\mathbb{Q}(N^{1/p})$, with P. Wake
Proceedings of the American Mathematical Society, Series B, Volume 9, (2022) 415 – 431

A_{inf} is infinite dimensional
with J. Ludwig *Journal of the Institute of Mathematics of Jussieu*, (2020), 1–7

Images of GL_2 -type Galois representations
with A. Conti, A. Medvedovsky
Oberwolfach Reports Volume 15, No. 2, (2018)

Chow motives associated to certain algebraic Hecke characters
with L. Flapan
Transactions of the American Mathematical Society, Series B, Volume 5, (2018), 102 – 124

On images of Galois representations in non-CM Hida families
Algebra Number Theory, Volume 10, No. 1, (2016), 155 – 194

Shadow lines in the arithmetic of elliptic curves
with J. Balakrishnan, M. Çiperiani, B. Mirza, R. Newton
Directions in number theory, Assoc. Women Math. Ser., 3, Springer, (2016), 33 – 55

Function fields with class number indivisible by a prime ℓ
with M. Daub, M. Merling, N. Pitiwan, A. Pacelli, M. Rosen
Acta Arithmetica, Volume 150, No. 4, (2011), 339 – 359

INVITED
LECTURES

Counting vexing congruences

- An Expedition into Arithmetic Geometry, University of Leiden, May 2023
- Representation Theory, L -functions and Arithmetic, University of Pittsburgh, May 2023
- Algebra Seminar, Michigan State University, April 2023
- Arithmetic Aspects of Deformation Theory, Banff International Research Station, January 2023
- AMS Fall Eastern Sectional Meeting, University of Massachusetts, Amherst, October 2022

Reasoning with irrationality: factorization when $19^{1/5}$ appears

- Eisenstein Event Colloquium, University of Pittsburgh, May 2022
- Drexel University, Colloquium, November 2022
- Franklin & Marshall and Millersville, Joint Colloquium, November 2022

A modular construction of unramified p -extensions of $\mathbb{Q}(N^{1/p})$

- Number Theory Seminar, Johns Hopkins University, October 2022

- International conference on p -adic L -functions and eigenvarieties, University of Notre Dame, July 2022
- Oberseminar for algebraic geometry and arithmetic, University of Essen, June 2022
- International seminar on automorphic forms, online, May 2022
- Algebra and Number Theory Seminar, University of Glasgow, May 2022
- Number Theory Seminar, University of Oxford, April 2022
- Number Theory Seminar, University of Warwick, January 2022
- Number Theory Seminar, University of Luxembourg, December 2021
- Joint Number Theory Seminar of Tsingua and BIMSA, China, November 2021
- Algebra Seminar, University of Pennsylvania, November 2021
- Number Theory Seminar, University of Virginia, November 2021
- Philadelphia Area Number Theory Seminar, Swarthmore College, October 2021
- Séminaire Théorie de Nombres, Clermont-Ferrand, October 2021

Towards explicit class field theory beyond the imaginary quadratic case

- Bryn Mawr College, Colloquium, October 2021

Eisenstein congruences at prime-square level and an application to class numbers

- UC Santa Barbara, Number theory seminar, December 2020
- University College Dublin, Algebra and number theory seminar, November 2020

Arithmetic, Geometry, and the Hodge/Tate Conjectures for self-products of some K3 surfaces

- Georgia Tech, Mathematics Colloquium, January 2020
- UC Santa Cruz, Mathematics Colloquium, January 2020
- CUNY-Baruch, Mathematics Colloquium, January 2020
- Fordham University, Mathematics Colloquium, January 2020
- Temple University, Mathematics Colloquium, December 2019

The Hodge and Tate Conjectures for self-products of some K3 surfaces

- *p -adic L -functions and Eigenvarieties*, University of Notre Dame, June 2020
(postponed due to Covid-19)
- Number theory days*, Regensburg, April 2020 (cancelled due to Covid-19)
- Workshop on Galois Representations, Automorphic Forms and their L -functions*,
University of Luxembourg, April 2020 (cancelled due to Covid-19)
- Imperial College, London number theory seminar, November 2019
- ENS Lyon, Number theory seminar, November 2019
- University of Bristol, Heilbronn number theory seminar, October 2019

Images of two-dimensional pseudorepresentations

- University of Muenster, Number theory seminar, July 2021
- Boston University, Number theory seminar, April 2021
- University of Sheffield, Number theory seminar, November 2020
- AMS Eastern Sectional Meeting, Special Session on Automorphic forms and Galois representations*,
Pennsylvania State University, October 2020
- Elliptic curves and their friends and families*, Nottingham, September 2019
- Recent advances in the arithmetic of Galois representations*, Genova, July 2019
- Number theory days*, Lille, July 2019
- *p -adic arithmetic of automorphic forms: conference in honor of Jacques Tilouine*
Paris, May 2019
- University of Heidelberg, Number theory seminar, May 2019
- University of Luxembourg, Number theory seminar, November 2018
- Institut de Mathématiques de Jussieu, Reductive groups and automorphic forms seminar,
November 2018
- University of Lille, Number theory seminar, October 2018

Images of GL_2 -type Galois representations

- Canadian Number Theory Association Conference*, XV, Quebec City, July 2018
- Algebraic Number Theory Workshop*, Oberwolfach, June 2018
- Utrecht University, Geometry Center seminar, April 2018

Chow motives associated to certain algebraic Hecke characters

- Technical University of Darmstadt, Algebra Seminar, November 2017
- Max Planck Institute for Mathematics, Bonn, Number theory lunch seminar, August 2017

Modularity for Schreieder's varieties

- Joint Mathematics Meetings*, Atlanta, AMS Special Session on "An amicable combination of algebra and number theory" (dedicated to Dr. Helen G. Grundman), January 2017

Images of Galois representations associated to Hida families

- Max Planck Institute for Mathematics, Bonn, Oberseminar, August 2017
- University of Amsterdam, Arithmetic and algebraic geometry seminar, April 2017
- IHES, Junior seminar, March 2017
- p-adic methods for Galois representations and modular forms workshop*
Barcelona, February 2017
- University of Heidelberg, Number theory seminar, February 2017
- University of Cambridge, Number theory seminar, January 2017
- Imperial College, London number theory seminar, December 2016
- Bay Area Algebraic Number Theory and Arithmetic Geometry Day*,
Berkeley, April 2016
- SouthEastern Regional Meeting on Numbers (SERMON XXIX)*,
James Madison University, April 2016
- Bryn Mawr College, Philadelphia area number theory seminar, March 2016
- University of Oregon, Number theory seminar, February 2016
- University of Regensburg, Arithmetic geometry seminar, January 2016
- Amherst College, Five colleges number theory seminar, September 2015
- Massachusetts Institute of Technology, Number theory seminar, September 2015
- University of Texas – Austin, Number theory seminar, March 2014

The BSD Conjecture

- Bryn Mawr College, Distressing math collective, March 2016

p-adic interpolation

- Loyola Marymount University, Mathematics colloquium, February 2015
- California State Polytechnic University, Mathematics colloquium, January 2014

CONTRIBUTED
TALKS

Images of Galois representations associated to Hida families

- 30th Automorphic Forms Workshop*, Winston–Salem, March 2016
- Joint Mathematics Meetings*, Seattle, Contributed Paper Session, January 2016
- AMS Western Sectional Meeting*, Fullerton, October 2015
- BU–Keio Workshop*, Boston University, September 2015
- Number theory conference*, University of Illinois at Urbana–Champaign, August 2015
- Mathematical Sciences Research Institute* Graduate summer school on
"New geometric techniques in number theory", July 2013

Introduction to p-adic modular forms

- Women in Mathematics in Southern California Symposium*,
Loyola Marymount University, October 2012

ADDITIONAL
CONFERENCE
PARTICIPATION

Lean for the curious mathematician, ICERM, July 2022

Journées Arithmétiques du LAGA, Université Sorbonne Paris Nord, March 2020

Women in Numbers
Local fields and Galois groups, Rennes, August 2019
Shadow Lines, Banff International Research Station, April 2014

Iwasawa, Bordeaux, June 2019

p-adic Langlands correspondence and Iwasawa theory, Lille, April 2019

p-adic Langlands Correspondence, Shimura Varieties, and Perfectoids,
CIRM Luminy, July 2018

*Conference on Arithmetic and Automorphic Forms on the occasion of
Günter Harder's 80th birthday*, Max Planck Institute for Mathematics, March 2018

Third Japanese-German Number Theory Workshop, Max Planck Institute for Mathematics,
November 2017

re:boot number theory, Duke University, June 2017

Number Theory Days, University of Paris 13, March 2017

London–Paris Number Theory Seminar: Perfectoid Spaces, Jussieu, November 2016

Galois Representations and Automorphic Forms, Będlewo, August 2016

The p-adic Langlands Program and Related Topics, University of Indiana – Bloomington,
May 2016 (presented poster)

Sage Days 69: Women in Sage 6, La Jolla, September 2015

*p-adic methods in number theory: A conference inspired by the mathematics of
Robert Coleman*, Berkeley, May 2015

p-adic methods in the theory of classical automorphic forms, CRM Montreal, March 2015

Automorphic forms, Shimura varieties, Galois representations and L-functions, MSRI
Berkeley, December 2014

New Geometric Techniques in Number Theory, MSRI Berkeley
Introductory workshop, August 2014
Connections for women, August 2014
Graduate summer school, July 2013

Graduate Summer School: Counting Arithmetic Objects, CRM Montreal, June 2014

p-adic variation in number theory, Boston University, June 2014

11th Annual Yale Bouchet Conference on Diversity and Graduate Education,
Yale University, March 2014

Arizona Winter School
Arithmetic Statistics Bjorn Poonen's project group, March 2014
Modular Forms and Modular Curves Frank Calegari's project group, March 2013

Hot Topics Workshop: Perfectoid Spaces and their Applications,
 MSRI Berkeley, March 2014

Conference on Stark's Conjectures and related topics,
 University of California – San Diego, September 2013

p-adic modular forms, L-functions, and Galois representations,
 University of California – Los Angeles, May 2013

Cohomology of Arithmetic Groups Graduate Workshop, Chicago, May 2013

p-adic modular forms and arithmetic, University of California – Los Angeles, June 2012

Southern California Number Theory Day
 University of California – San Diego, May 2015
 California Institute of Technology, April 2015
 University of California – Irvine, October 2014

Joint Mathematics Meetings, January 2017, 2016, 2013, 2012

TEACHING
 EXPERIENCE

Temple University, Instructor of Record
 -9000 *Elliptic Curves*, Spring 2023
 -2101 *Linear Algebra*, Fall 2022
 -8011 *Abstract Algebra I*, Fall 2021

University of Oxford, Class Tutor
 -*Galois Theory*, Fall 2020
 -*Introduction to Representation Theory*, Fall 2020
 -*Category Theory*, Fall 2020
 -*Elliptic Curves*, Winter 2021

University of Paris 13, Teaching Assistant (all Paris 13 classes taught in French)
 -*Groups and Symmetries*, Spring 2020
 -*Linear Algebra II* (second semester of linear algebra for math majors), Fall 2019
 -*Calculus I* (first semester calculus for physics, chemistry, engineering majors), Fall 2019
 -*Linear Algebra I* (first semester of linear algebra for math majors), Spring 2019
 -*Multivariable Calculus* (for physics and chemistry majors), Fall 2018
 -*Calculus II* (sequences and series for engineering majors), Fall 2018

MSRI Graduate Summer School, Teaching Assistant
 -*Automorphic Forms and the Langlands Program*, with Kevin Buzzard, Summer 2017

University of California – Los Angeles
 -*Teaching College Mathematics* (trained new teaching assistants),
 Teaching Assistant Consultant, Fall 2013
 -*Discrete Mathematics*, Teaching Fellow, Spring 2014
 -*Group Theory*, Teaching Fellow, Winter 2014
 -*Integration and Infinite Series*, Teaching Fellow, Fall 2013

-*Integration and Infinite Series*, Teaching Assistant, Summer 2013, Spring 2011

Summer Program for Women in Mathematics, George Washington University,
Teaching Assistant, Summer 2012

-*Normed Division Algebras*, with Alissa Crans

-*Semigroups*, with Berit Givens

Program in Mathematics for Young Scientists (PROMYS), Boston University
Counselor, Summer 2010

Bryn Mawr College

-*Abstract Algebra II*, Problem Session Leader and Grader, Spring 2009

-*Abstract Algebra I*, Problem Session Leader and Grader, Fall 2008

-*Linear Algebra*, Peer Instructor, Spring 2008

-*Multivariable Calculus*, Peer Instructor, Fall 2007

-*Transitions to Higher Mathematics*, Problem Session Leader and Grader, Spring 2007

-*Calculus 101*, Problem Session Leader, Fall 2006

-*Multivariable Calculus (enriched)*, Grader, Fall 2006

CONFERENCE
AND
SEMINAR
ORGANIZATION

Co-organizer: *Temple University Algebra Seminar*, 2021 – present

Co-organizer: *Philadelphia Area Number Theory Seminar*, 2021 – present

Co-organizer: Mathematics Department Colloquium (2022 – present)

Co-organizer: *Number Theory Conference*, Universidade de Santiago de Chile, December 2024

Co-organizer: *Graduate Conference in Algebra, Geometry, and Topology*, Temple University, May 2023

Co-organizer: *Symposium on arithmetic geometry and its applications*, CIRM Luminy, February 2023

Project co-leader: *APAW Collaborative Research Workshop: The Eisenstein Ideal at prime-square level*,
University of Oregon, August 2022

Co-organizer: *Galois Representations, automorphic forms and L-functions*, CIRM Luminy, June 2022

TEMPLE
UNIVERSITY
SERVICE

Member: Mathematics Department Graduate Committee (2021 – present)

SERVICE
AND
OUTREACH

President: Graduate Student Organization of the UCLA Mathematics Department

Organizer and facilitator: NSF Graduate Research Fellowship application workshop
for UCLA math graduate students

Co-founder and co-organizer: UCLA Women in Math (WiM)

Co-creator and facilitator: Monty Hall Problem booth at UCLA's EmpowHer STEM Day
for middle school girls from under-resourced schools

Software contributor: SageMath (a free open-source mathematics software system)

Reviewer: *Math Reviews*

Nominator: 2017 winner of the Association for Women in Mathematics
Gweneth Humphreys Award

Panelist: *A Pair of Automorphic Workshops* conference, July 2022
Academic job market panel

Panelist: Graduate School Panel
-Aftermath Conference for Undergraduates, Harvey Mudd College
-Undergraduate Mathematics Students Association, UCLA

Panelist: *Cross Atlantic Representation Theory and Other topics ONline* conference, May 2020
“Global” panel: Challenges the math community faces in the future

Co-organizer North meets South, Mathematics department colloquium,
Oxford University (Hilary Term 2021)

Co-founder and co-organizer POINT: People Online In Number Theory
a virtual community to help early career number theorists during the Covid-19 pandemic

Referee:

- Math Research Letters*
- Proceedings in Mathematics and Statistics* (special volume in Springer series)
- Documenta Mathematica*
- American Mathematical Monthly*
- *International Journal of Number Theory*
- ANTS*

STUDENTS Nizar Bou Ezz (current Ph.D. student, Temple)
 Aniruddha Sudarshan (current Ph.D. student, Temple)
 Tasnia Kader (undergraduate research student, Temple, 2023)
 Kashti Umare (high school independent study, 2022)
 Zecheng Yi (masters independent study, Oxford, 2021)

LANGUAGES English (native)
 French (proficient)
 German (beginner)
 Portuguese (beginner)