Ana Caraiani

| CONTACT INFORMATION | Mathematisches Institut
Universität Bonn
Endenicher Allee 60
53115 Bonn, Germany | *Email:* caraiani@math.uni-bonn.de
WWW: math.uni-bonn.de/people/caraiani |

RESEARCH INTERESTS

The Langlands program, algebraic number theory, arithmetic geometry, representation theory.

EDUCATION

Ph.D. in Mathematics, Harvard University   9/2007–6/2012

- Thesis: Local-global compatibility and the action of monodromy on nearby cycles
- Advisor: Richard Taylor

B.A. in Mathematics, Summa cum Laudae, Princeton University   9/2003–6/2007

- Senior thesis: On the modularity of certain Galois representations
- Senior thesis advisor: Andrew Wiles

EMPLOYMENT

Bonn Junior Fellow, Hausdorff Center for Mathematics   8/2016–present

Veblen Research Instructor and NSF Postdoctoral Fellow,   9/2013–7/2016
Princeton University and Institute for Advanced Study

L.E. Dickson Instructor and NSF Postdoctoral Fellow,   9/2012–8/2013
University of Chicago

PUBLICATIONS AND PREPRINTS

1. "Patching and the p-adic Langlands program for $GL_2(Q_p)$", joint with M. Emerton, T. Gee, D. Geraghty, V. Paskunas and S.W. Shin, in preparation.

2. "On the generic part of the cohomology of compact unitary Shimura varieties", joint with P. Scholze, submitted, 96 pages, arXiv:1511.02418.

3. "Kisin modules with descent data and parahoric local models", joint with B. Levin, submitted, 33 pages, arXiv:1510.07503.

4. "p-adic q-expansion principles on unitary Shimura varieties", joint with E. Eischen, J, Fintzen, E. Mantovan and I. Varma, to appear in Directions in Number Theory: Proceedings of the WIN3 Workshop, 36 pages, arXiv:1411.4350.

5. "On the image of complex conjugation in certain Galois representations", joint with B.V. Le Hung, Compositio Math. 152 (2016), No. 7, 1476-1488.

6. "Patching and p-adic local Langlands", in Algebraische Zahlentheorie, joint with M. Emerton, T. Gee, D. Geraghty, V. Paskunas and S.W. Shin, Oberwolfach Report No. 32 (2014).

7. "Patching and the p-adic local Langlands correspondence", joint with M. Emerton, T. Gee, D. Geraghty, V. Paskunas and S.W. Shin, Cambridge Journal of Math. 4 (2016), No. 2, 197-287.

8. "Local-global compatibility and monodromy for $l = p$", Algebra & Number Theory 8 (2014), no. 7, 1597-1646.

9. "Local-global compatibility and the action of monodromy on nearby cycles", Duke Mathematical Journal 161 (2012), no. 12, 2311-2413.

10. "Multiplicative semigroups related to the $3x + 1$ problem", Adv. Appl. Math. 45 (2010), no. 3, 373-389.

GRANTS	· NSF Grant DMS-1501064 (PI), \$159,469	2015-2018
	· Funding for Banff Focused Research Group "Geometric aspects of p-adic automorphic forms"	Fall 2014
	· NSF Mathematical Sciences Postdoctoral Research Fellowship, \$150,000	2012–2015
	· AIM SQuaRE Grant "The p-adic Langlands program for non-split groups"	2013-2015
	· Funding for Banff Focused Research Group "The p-adic Langlands program for non-split groups"	Summer 2012

SELECTED AWARDS AND HONORS	· Mathematical Science Research Institute, Research Member	Fall 2014
	· James Mills Peirce Fellowship for Graduate Study, Harvard University	2007-2010
	· William Lowell Putnam Fellowship for Graduate Study, Harvard University	2007-2009
	· George B. Covington Prize, Department of Mathematics, Princeton University	2007
	· Middleton Miller Prize, Department of Mathematics, Princeton University	2007
	· Alice T. Schafer Prize, Association for Women in Mathematics	2007
	· Member of 1st place Putnam team	2006
	· Andrew H. Brown Prize, Department of Mathematics, Princeton University	2006
	· Putnam Fellow and Elizabeth Lowell Putnam Prize	2003, 2004
	· Gold Medal, International Mathematical Olympiad	2002, 2003
	· Silver Medal, International Mathematical Olympiad	2001

TEACHING EXPERIENCE	· Étale cohomology, University of Bonn (upcoming)	Winter 2016/2017
	· Minicourse on Shimura varieties, Algebraic Geometry Bootcamp, Utah	July 2015
	· Linear algebra and applications (MAT202, 2 sections), Princeton University	Spring 2015
	· Topics in Number Theory: Introduction to Modular Forms and L-functions (MAT 419), Princeton University	Spring 2014
	· Numbers, Equations and Proofs (MAT214), Princeton University	Fall 2013
	· Teaching assistant for Frank Calegari and Toby Gee, Arizona Winter School	Spring 2013
	· Linear algebra and differential equations (Math 21b), Harvard University	Spring 2012
	· Multivariable calculus (Math 21a), Harvard University	Fall 2008, 2009, 2010
	· Course assistant to Marie-France Vigneras, Introduction to the p-adic Langlands program, Program for Women and Mathematics, Institute for Advanced Study	May 2010
	· Course assistant to Noam Elkies, Introduction to Analytic Number Theory (Math 229x), Harvard University	Spring 2010
	· Quadratic forms in number theory (tutorial), Harvard University	Summer 2008
	· Mathematics tutor, Frist Study Halls, Princeton University	2004-2006

Invited talks	· Arizona Winter School, minicourse (upcoming)	March 2017
	· Special session on Automorphic forms and arithmetic, JMM, Atlanta (upcoming)	January 2017
	· Arithmetic geometry, Oberwolfach	August 2016
	· The Langlands correspondence in arithmetic and geometry, minicourse (5 talks)	August 2016
	· Geometric methods in the mod p Langlands correspondence, Pisa (2 talks)	June 2016
	· Workshop on Shimura varieties and related topics, Taipei	June 2016
	· Workshop on the p-adic Langlands program and related topics, Indiana University, Bloomington	May 2016
	· Advances in geometric representation theory, University of Michigan (2 talks)	May 2016
	· Arbeitsgemeinschaft: The geometric Langlands conjecture, Oberwolfach	April 2016
	· Colloquium, UCLA	March 2016
	· UCLA number theory seminar	March 2016
	· Colloquium, Yale	February 2016
	· Colloquium, University of Wisconsin	January 2016
	· Special mathematics seminar, MIT	January 2016
	· Colloquium, University of Washington	January 2016
	· Colloquium, Berkeley	January 2016
	· Colloquium, UC Irvine	January 2016
	· Northwestern number theory seminar	January 2016
	· UCSD number theory seminar	January 2016
	· Colloquium, UCSD	January 2016
	· BU number theory seminar	January 2016
	· Colloquium, University of Toronto	January 2016
	· Hausdorff Center for Mathematics seminar, Bonn	December 2015
	· Colloquium, UIUC	December 2015
	· UT Austin number theory seminar	December 2015
	· IAS Members' Seminar	December 2015
	· Colloquium, Michigan State University	December 2015
	· Colloquium, University of Pennsylvania	December 2015
	· Colloquium, Rice University	December 2015
	· Colloquium, Boston College	December 2015
	· Michigan Group, Lie and Number theory seminar	November 2015
	· Colloquium, University of Southern California	November 2015
	· Colloquium, University of Notre Dame	November 2015
	· University of Minnesota Lie Theory seminar	November 2015
	· Colloquium, University of Minnesota	November 2015
	· University of Pennsylvania Algebra seminar	November 2015
	· Harvard/MIT Algebraic Geometry seminar	October 2015
	· BU Number theory seminar	October 2015
	· Joint Columbia-CUNY-NYU number theory seminar	October 2015
	· Wisconsin number theory seminar	October 2015

- University of Chicago number theory seminar   October 2015
- Northwestern number theory seminar   October 2015
- AMS Central Fall Sectional Meeting (Chicago, IL), special session on   October 2015
  The Langlands program and related topics
- Motives and automorphic forms, Clay Math Institute, Oxford   September 2015
- Johns Hopkins number theory seminar   September 2015
- Algebraic Geometry Bootcamp, University of Utah   July 2015
- Around Langlands correspondences, Université Paris Sud, Orsay   June 2015
- Journées arithmetiques a Lyon, ÉNS Lyon   June 2015
- IAS Program for Women and Mathematics, Princeton Day   May 2015
- Sophus Lie Days, Cornell (2 talks)   April 2015
- p-adic methods in the theory of classical automorphic forms,   March 2015
  CRM, Montreal
- UCLA number theory seminar   December 2014
- Automorphic forms, Shimura varieties, Galois representations and L-functions   December 2014
  (Michael Harris' 60th birthday conference), MSRI
- UT Austin number theory seminar   November 2014
- MSRI/Evans lecture, Berkeley   November 2014
- Bay Area Number Theory and Arithmetic Geometry Day, Berkeley   November 2014
- Connections for Women: New Geometric Methods in Number Theory and   August 2014
  Automorphic Forms, MSRI
- Algebraische Zahlentheorie, Oberwolfach   July 2014
- Arithmetique des varietes de Shimura et des formes automorphes et Applications,   July 2014
  Luminy, France
- University of Bonn Arbeitsgemeinschaft Arithmetische Geometrie seminar   June 2014
- Caltech number theory seminar   May 2014
- Johns Hopkins and University of Maryland Algebra and Number Theory Day   April 2014
- Hot Topics Workshop on Perfectoid Spaces, MSRI   February 2014
- Princeton/IAS number theory seminar   December 2013
- Princeton junior number theory seminar (2 talks)   December 2013
- CUNY collaborative number theory seminar   November 2013
- University of Pennsylvania Galois seminar   November 2013
- Purdue number theory seminar   April 2013
- University of Chicago number theory seminar   April 2013
- Stanford number theory seminar   April 2013
- UIUC number theory seminar   March 2013
- Colloquium, Caltech   March 2013
- Southern California Number Theory Days   March 2013
- UT Austin number theory seminar   March 2013
- AWM Workshop, JMM, San Diego   January 2013
- UIC number theory seminar   November 2012

· Workshop on p-adic cohomology and its applications to arithmetic geometry, Tohoku University, Sendai, Japan	October 2012
· Towards a local proof of Local Langlands workshop, UIC (2 lectures)	May 2012
· BU number theory seminar	March 2012
· Workhsop on Shimura varieties, Fields Institute, Toronto	March 2012
· Workshop for graduate students, Fields Institute, Toronto (2 lectures)	March 2012
· University of Michigan Lie groups and number theory seminar	March 2012
· University of Pennsylvania Galois seminar	February 2012
· MIT number theory seminar	February 2012
· Caltech number theory seminar	December 2011
· University of Chicago number theory seminar	October 2011
· Northwestern number theory seminar	October 2011
· Harvard number theory seminar	October 2011
· Workshop on Shimura varieties and Rapoport-Zink spaces, Tokyo, Japan	July 2011
· Automorphic forms seminar, Jussieu	June 2011
· Workshop on Galois representations and automorphic forms, IAS	March 2011
· Galois representations seminar, IAS	January 2011
· Program for Women and Mathematics, Institute for Advanced Study	May 2007

RESEARCH VISITS

· École Normale Superieure, Lyon	June 2015
· MSRI, New Geometric Methods in Number Theory and Automorphic Forms	Aug.-Dec. 2014
· Hausdorff Center for Mathematics, Bonn	June 2014

CONFERENCES ATTENDED

· Arithmetic geometry, representation theory and applications, Luminy	June 2015
· p-adic methods in number theory, Berkeley	May 2015
· Categorical Structures in Harmonic Analysis, MSRI	November 2014
· Introductory Workshop for New Geometric Methods in Number Theory and Automorphic Forms, MSRI	September 2014
· Bellairs workshop in number theory, Barbados	May 2014
· Women in Numbers 3, Banff International Research Station	April 2014
· Gelfand Centennial Conference, MIT	September 2013

SERVICE	· Co-organizer, Special session on "Automorphic forms and arithmetic", Joint Math Meetings, Atlanta, GA	January 2017
	· Co-organizer, Princeton/IAS number theory seminar	2013-2014, 2015-2016
	· Invited Speaker, European Girls' Math Olympiad, Busteni, Romania	April 2016
	· Invited Speaker, Women in Math and Statistics, Harvard	April 2016
	· Advised Siyan Daniel Li's junior project on "The zeta function of a modular curve", Princeton University	Spring 2016
	· Reader for Ila Varma's PhD thesis on Local-Global Compatibility, Princeton University	Summer 2015
	· Advised Siyan Daniel Li's summer project on Perfectoid Spaces, Princeton University	Summer 2015
	· Reader for Isabelle Nogues's senior thesis on p-adic Analysis, Princeton University	Spring 2015
	· Co-organizer, Banff Focused Research Group on "Geometric aspects of p-adic automorphic forms"	November 2014
	· Co-organizer, MSRI graduate student working seminar on "The geometric Satake correspondence"	Fall 2014
	· Co-leader, Women in Numbers 3, Banff	Spring 2014
	· Co-leader, Women in Numbers Europe, Luminy	Fall 2013
	· Advised Isabelle Nogues's junior project on Elliptic Curve Cryptography, Princeton University	Spring 2014
	· Referee for Journal of the AMS, Compositio, Forum of Math. Sigma, IMRN etc	2013-present
	· Served on professional development panels (at Algebraic Geometry Bootcamp, MSRI, Princeton, University of Chicago)	2013-present
	· Co-organizer and co-founder, Women in Math Lunches, Harvard University	2008-2012
TALKS IN WORKING SEMINARS	· Cohomological congruences between Heegner points, Princeton/IAS working seminar on Wei Zhang's work	Spring 2016
	· Princeton/IAS working seminar on Emerton's "Local-global compatibility in the p-adic Langlands programme"	Spring 2015
	· Background on p-divisible groups, Princeton/IAS working seminar on Scholze-Weinstein, 2 talks	Spring 2014
	· Introduction to motives, Goncharov reading group, IAS	Spring 2014
	· The anticanonical tower, Princeton/IAS working seminar on Scholze's "On torsion in the cohomology of locally symmetric varieties"	Fall 2013
	· The motivic fundamental group, Princeton/IAS working seminar on Deligne's "The fundamental group of P^1 minus three points"	Fall 2011
MISCELLANEOUS	· Citizenship: Romanian and American	
	· Languages: Romanian (native), English (fluent), Spanish (fluent), German (beginner), French (reading)	