

# ROMYAR T. SHARIFI

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## POSITIONS

2016-	University of California, Los Angeles, Professor
2013-2016	University of Arizona, Professor
2009-2013	University of Arizona, Associate Professor
2007-2009	McMaster University, Associate Professor
2004-2007	McMaster University, Assistant Professor
2003-2004	Max Planck Institute for Mathematics, Guest
2001-2003	Harvard University, NSF Postdoctoral Research Fellow
2000-2001	University of Arizona, NSF VIGRE Postdoctoral Research Fellow
1999	Mathematical Sciences Research Institute, Postdoctoral Fellow

## EDUCATION

June 1999	Ph.D. in Mathematics, The University of Chicago
August 1995	S.M. in Mathematics, The University of Chicago
May 1994	B.A. in Mathematics and Physics, University of California, Berkeley

## AWARDS AND FELLOWSHIPS

2020	Fellow of the American Mathematical Society
2014-2015	Simons Fellowship in Mathematics
2005-2009	Canada Research Chair in Number Theory, Tier II
2001-2003	NSF Mathematical Sciences Postdoctoral Research Fellowship

## GRANTS

2021-	NSF Research Award DMS-2101889
2018-	NSF Research Award DMS-1801963 (supplement awarded in 2021)
2015-2019	NSF Award for the Arizona Winter School in Arithmetic Geometry (co-PI)
2014-2018	NSF Research Award DMS-1401122/1661658
2014-2017	NSF Focused Research Group Award DMS-1360583
2014-2015	NSA MSP Standard Grant
2013-2016	NSF Award for the Southwest Center for Arithmetic Geometry
2010-2012	NSF Award for Iwasawa 2010
2009-2013	NSF Research Award DMS-0901526
2007-2008	NSF Award for Summer School on Iwasawa Theory (co-PI)
2006-2009	Early Researcher Award, Ministry of Research and Innovation, Ontario
2005-2009	NSERC Discovery Grant

## SHORT-TERM VISITS

Jan.-Mar. 2018	Institute for Advanced Study, Princeton
Apr.-June 2015	University of California, Los Angeles
Jan.-Feb. 2015	University of Oxford
Oct.-Nov. 2014	The University of Chicago
Aug.-Sept. 2014	University of California, Berkeley
May-June 2010	Institut des Hautes Études Scientifiques, Paris
July-Oct. 2009	Isaac Newton Institute, Cambridge
May 07-Aug. 08	The Fields Institute, Toronto
April 2007	Univerisité de Caen
June 2006	Institut des Hautes Études Scientifiques, Paris
Sept. 2005	Le Centre de Recherches Mathématiques, Montréal
June-July 2005	Max Planck Institute for Mathematics, Bonn
May-July 2002	Universität Regensburg
May-July 2001	University of Nottingham

## PUBLICATIONS

- Romyar T. Sharifi, An extension of the Fukaya-Kato method, preprint, 56 pages.
- Akshay Venkatesh, Romyar Sharifi, Eisenstein cocycles in motivic cohomology, arXiv:2011.07241, 86 pages.
- Takako Fukaya, Kazuya Kato, Romyar Sharifi, Toroidal compactifications of the moduli spaces of Drinfeld modules, I, arXiv:2008.13376, 84 pages.
- Yeuk Hay Joshua Lam, Yuan Liu, Romyar Sharifi, Jiuya Wang, Preston Wake, Generalized Bockstein maps and Massey products, arXiv:2004.11510, 42 pages.
- Romyar T. Sharifi, Reciprocity maps with restricted ramification, to appear in *Trans. Amer. Math. Soc.*, arXiv:1609.03616, 40 pages.
- Frauke Bleher, Ted Chinburg, Ralph Greenberg, Mahesh Kakde, Romyar Sharifi, and Martin Taylor, Exterior products in Iwasawa theory, *J. Eur. Math. Soc.* **24** (2022), 967-1005.
- Frauke Bleher, Ted Chinburg, Ralph Greenberg, Mahesh Kakde, George Pappas, Romyar Sharifi, and Martin Taylor, Higher Chern classes in Iwasawa theory, *Amer. J. Math.* **142** (2020), 627-682.
- Romyar Sharifi, Iwasawa theory: a climb up the tower, *Notices Amer. Math. Soc.* **66**, no. 1 (2019), 16-26.
- Takako Fukaya, Kazuya Kato, and Romyar Sharifi, Compactifications of  $S$ -arithmetic quotients for the projective general linear group, in Elliptic Curves, Modular Forms and Iwasawa Theory, In Honour of John H. Coates' 70th Birthday, *Springer Proc. Math. Stat.* **188**, Springer, 2016, 161-223.
- Takako Fukaya, Kazuya Kato, and Romyar Sharifi, Modular symbols and the integrality of zeta elements, *Ann. Math. Qué.*, Special Issue on the Occasion of the 60th Birthday of Glenn Stevens (Part II) **40** (2016), 377-395.
- Takako Fukaya, Kazuya Kato, and Romyar Sharifi, Modular symbols in Iwasawa theory, in Iwasawa Theory 2012 - State of the Art and Recent Advances, *Contrib. Math. Comput. Sci.* **7**, Springer, 2014, 177-219.
- Romyar T. Sharifi, The reciprocity conjecture of Khare and Wintenberger, *Inter. Math. Res.*

*Not. IMRN* **2014** (2014), 1409-1424.

- Meng Fai Lim and Romyar T. Sharifi, Nekovář duality over  $p$ -adic Lie extensions of global fields, *Doc. Math.* **18** (2013), 621-678.
- Romyar Sharifi, Galois module structure of local unit groups, *Algebra Number Theory* **7** (2013), 157-191.
- Romyar Sharifi, A reciprocity map and the two-variable  $p$ -adic  $L$ -function, *Ann. of Math.* **173** (2011), 251-300.
- Romyar T. Sharifi, Cup products and  $L$ -values of cusp forms, *Pure Appl. Math. Quart.* **5**, Special Issue: In honor of Jean-Pierre Serre (2009), 339-348.
- Romyar T. Sharifi, On Galois groups of unramified pro- $p$  extensions, *Math. Ann.* **342** (2008), 297-308.
- Romyar T. Sharifi, Iwasawa theory and the Eisenstein ideal, *Duke Math. J.* **137** (2007), 63-101.
- Romyar T. Sharifi, Massey products and ideal class groups, *J. reine angew. Math.* **603** (2007), 1-33.
- Yoshitaka Hachimori and Romyar T. Sharifi, On the failure of pseudo-nullity of Iwasawa modules, *J. Alg. Geom.* **14** (2005), 567-591.
- William G. McCallum and Romyar T. Sharifi, A cup product in the Galois cohomology of number fields, *Duke Math. J.* **120** (2003), 269-310.
- Romyar T. Sharifi, Relationships between conjectures on the structure of pro- $p$  Galois groups unramified outside  $p$ , in *Arithmetic Fundamental Groups and Noncommutative Algebra*, *Proc. Sympos. Pure Math.* **70**, Amer. Math. Soc., 2002, 275-284.
- Romyar T. Sharifi, Determination of conductors from Galois module structure, *Math. Z.* **241** (2002), 227-245.
- Romyar T. Sharifi, Minimal conductors of Kummer extensions by roots of unit elements, *J. Ramanujan Math. Soc.* **16** (2001), 101-117.
- Romyar T. Sharifi, On norm residue symbols and conductors, *J. Number Theory* **86** (2001), 196-209.
- Romyar T. Sharifi, Twisted Heisenberg representations and local conductors, Ph.D. thesis, The University of Chicago, 1999.
- Romyar T. Sharifi, Ramification groups of nonabelian Kummer extensions, *J. Number Theory* **65** (1997), 105-115.
- Romyar T. Sharifi, On cyclotomic polynomials, power residues, and reciprocity laws, *Enseign. Math.* **43** (1997), 319-336.

## INVITED CONFERENCE TALKS

Eisenstein series and equivariant cohomology, Regensburg, Germany (virtual meeting), July 2021.

Arithmetic quotients of locally symmetric spaces and their cohomology, CRM, Montréal, Quebec (virtual meeting), Oct. 2020.

Iwasawa 2019, Bordeaux, France, June 2019.

Eisenstein ideal and Iwasawa theory, Beijing, China, June 2019.

Advances in Iwasawa theory, AMS Special Session, Honolulu, Mar. 2019.

JHU-UMD Algebra and Number Theory Day, U. Maryland, Nov. 2018.

Special values of automorphic  $L$ -functions and associated  $p$ -adic  $L$ -functions, BIRS, Oaxaca,

Mexico, Oct. 2018.  
 Arithmetic algebraic geometry — in honor the 60th birthday of Grzegorz Banaszak, Poznan, Poland, Aug. 2018.  
 Profinite monodromy, Galois representations, and complex functions, RIMS, Kyoto, Japan, May 2018.  
 Iwasawa theory and related topics, Heidelberg, Germany, May 2018.  
 Low dimensional topology and number theory X, Fukaoka, Japan, Mar. 2018.  
 Arizona Winter School 2018 on Iwasawa Theory (4 lectures), U. Arizona, Mar. 2018.  
 Automorphic Forms and Arithmetic, AMS Special Session, Atlanta, Jan. 2017.  
 Southern California Number Theory Day, UC Irvine, Oct. 2016.  
 2016 Pan Asia Number Theory Workshop, Academica Sinica, Taipei, Taiwan, July 2016.  
 Bay Area Algebraic Number Theory and Arithmetic Geometry Day, UC Berkeley, Apr. 2016.  
 Palmetto Number Theory Series XXIV, Emory U., Sept. 2015.  
 AMS Summer Institute in Algebraic Geometry, U. Utah, July 2015.  
 Elliptic Curves, Modular Forms, and Iwasawa Theory – in honour of the 70<sup>th</sup> birthday of John Coates, Cambridge, Mar. 2015.  
 Arithmetic Algebraic Geometry, CMS Special Session, Dec. 2014.  
*p*-adic Modular forms, *L*-functions, and Galois Representations, UCLA, May 2013.  
 Iwasawa theory and Galois representations, U. Warwick, Apr. 2013.  
 Applications of Iwasawa algebras, BIRS, Banff, Canada, Mar. 2013.  
*L*-functions and Arithmetic, Seoul, Korea, Oct. 2012 (3 lectures).  
 Iwasawa 2012, Heidelberg, Germany, July-Aug. 2012.  
*p*-adic Modular Forms and Arithmetic – in honor of Haruzo Hida’s 60<sup>th</sup> birthday, UCLA, June 2012.  
 Pro-unipotent Fundamental Groups: Arithmetic and Diophantine Aspects, Bellairs Research Institute, Barbados, May 2012.  
 Cycles on Modular Varieties, BIRS, Banff, Canada, Oct. 2011.  
 Development of Galois-Teichmüller theory and anabelian geometry, RIMS, Kyoto, Japan, Oct. 2010.  
 Modular/Geometric Iwasawa Theory and *p*-adic *L*-functions, UCLA, June 2010 (3 lectures).  
 Southern California Number Theory Day, UCSD, March 2010.  
 Non-Commutative Algebra and Iwasawa Theory, ICMS, Edinburgh, Sept. 2009.  
 Non-Abelian Fundamental Groups in Arithmetic Geometry: Introductory Workshop, Isaac Newton Institute, July 2009.  
 IAS/Park City Mathematics Institute: Arithmetic of *L*-functions, Park City, Utah, July 2009.  
 Québec/Maine Number Conference on Number Theory, U. Laval, Oct. 2008.  
 Canadian Number Theory Association X Meeting, U. Waterloo, July 2008.  
 Conference in Honour of John Labute, Montreal, Nov. 2007.  
 Algebraische Zahlentheorie, Oberwolfach, Germany, June 2007.  
 Canadian Number Theory Association IX Meeting, UBC, Vancouver, July 2006.  
 Iwasawa 2006, Limoges, France, July 2006.  
 Pro-*p* Extensions of Global Fields and Pro-*p* Groups, Oberwolfach, Germany, May 2006.  
 Galois Theory in Arithmetic and Geometry, AMS Special Session, Durham, NH, Apr. 2006.  
 Field Extensions and Algorithms, AMS Special Session, San Antonio, Jan. 2006.  
 Open Questions and Recent Developments in Iwasawa Theory – in honor of Ralph Greenberg’s 60<sup>th</sup> birthday, Boston U., June 2005.

Arithmetic Algebraic Geometry, AMS Special Session, Atlanta, Jan. 2005.  
 Arithmetic Geometry, CMS Special Session, Montreal, Dec. 2004.  
 Weekend Workshop on Arithmetic and Geometry of Higher Dimensional Varieties, Fields  
 Institute, Oct. 2004.  
 Iwasawa 2004, Besançon, France, July 2004.  
 Algorithms and Number Theory, Schloss Dagstuhl, Germany, May 2004.  
 Geometric Methods in Algebra and Number Theory, U. Miami, Dec. 2003.  
 The John H. Barrett Memorial Lectures: Recent Progress in Arithmetic and Algebraic  
 Geometry, University of Tennessee-Knoxville, April 2002.  
 Arithmetic Aspects of Fundamental Groups, Maratea, Italy, Sept. 2001.  
 NoMaDS (Nottingham-Manchester-Durham-Sheffield) Meeting, Sheffield, July 2001.  
 Galois Theory and Explicit Methods, CIRM, Luminy, France, June 2001.  
 Field Theory and Arithmetic, St. Etienne, France, May 2001.  
 Number Theory with a Geometric Flavor, AMS Special Session, Las Vegas, April 2001.  
 Graduate and Postdoctoral Education in Arithmetic Geometry: The Arizona Winter School,  
 AMS Special Session, New Orleans, Jan. 2001.  
 Galois Representations, AMS Special Session, Urbana-Champaign, May 1999.  
 Midwest Algebraic Number Theory Day, UIUC, March 1997.  
 Undergraduate Research, AMS Special Session, Eugene, June 1994.

## **EXTERNAL SEMINARS AND COLLOQUIA**

2021 Columbia-CUNY-NYU  
 2020 University of Chicago, UC Berkeley  
 2019 Harvard University, Arizona State (colloquium and seminar), Michigan State  
 (colloquium), UC Santa Barbara (colloquium)  
 2018 Institute for Advanced Study (lecture series), Columbia-CUNY-NYU, University  
 of Pennsylvania  
 2017 Stanford University  
 2016 University of Texas at Austin, Duke University  
 2015 UCLA (colloquium and seminar series), Caltech, UC San Diego  
 2014 University of Washington, Columbia University, UC Berkeley  
 2013 University of Oxford, Columbia University, Johns Hopkins University  
 2012 UCLA (colloquium and seminar), Arizona State (colloquium and seminar),  
 Northwestern University, University of Chicago, University of British Columbia  
 2011 Northwestern University, University of Chicago  
 2010 University of Texas at Austin  
 2009 Institut de Mathématiques de Jussieu, University of Bristol, University of  
 Birmingham, Stanford University, Arizona State (colloquium and seminar)  
 2008 McGill University, University of Arizona, Duke University, Cornell University  
 2007 Université de Franche-Comté, Université de Caen (seminar and lecture series)  
 2006 University of Rochester, University of Western Ontario (colloquium)  
 2005 McGill University, University of Western Ontario, Max Planck Institute for  
 Mathematics, Ohio State University, UC San Diego, Rice University  
 2004 University of Notre Dame, University of Wisconsin, University of Illinois at  
 Urbana-Champaign, McMaster University, Queen's University, Boston University,

- Michigan State University, University of Virginia, Cambridge University,  
 Universität Heidelberg, International University Bremen (colloquium)
- 2003 University of Washington, University of California at Irvine, UC Santa Barbara,  
 Universität Göttingen
- 2002 Boston University, Columbia University, Brown University, Universität  
 Regensburg, University of Arizona, UC Berkeley, Caltech, Amherst College,  
 University of Massachusetts Amherst
- 2001 University of London, Nottingham University, University of Arizona, Brandeis

### **EXTERNAL SERVICE**

- 2018- Member, Advisory Board, Arizona Winter School
- 2014- Editor, Proceedings of the American Mathematical Society
- 2007-2009 Member, Research Committee, Canadian Mathematical Society

### **CONFERENCE ORGANIZATION**

- Dec. 2021 Scientific Committee Member, PRIMA Congress 2021,  
 Pacific Rim Mathematical Association, Vancouver, Canada
- Mar. 2015-2018 Co-organizer, Arizona Winter School, University of Arizona  
 Scientific Organizer, AWS 2018 on Iwasawa Theory  
 Funded by NSF award DMS-1504537 (co-PI)  
 Additional funding from Clay Mathematics Institute 2016-18 (co-PI)
- June 2016 Co-organizer, New directions in Iwasawa theory,  
 Banff International Research Station
- Mar. 2013-2015 Lead Organizer, Arizona Winter School, University of Arizona  
 Funded by NSF award DMS-1161523 (PI)
- Oct. 2011 Primary Organizer, Workshop on Iwasawa Theory, University of Arizona  
 Funded by NSF award DMS-1005225 (PI)
- July 2010 Co-organizer, Iwasawa 2010, University of Toronto  
 Funded by the Fields Institute (co-PI) and NSF award DMS-1005225 (PI)
- Dec. 2007 Co-organizer, Special Session on Iwasawa Theory, CMS Winter Meeting
- Aug. 2007 Primary Organizer, Summer School in Iwasawa Theory, McMaster Univ.  
 Funded by the Fields Institute (PI) and NSF award DMS-0646805 (co-PI)
- June 2007 Contact Organizer, Modular Forms: Arithmetic and Computation,  
 Banff International Research Station

### **POSTDOCTORAL SUPERVISION**

- 2017- Niccolo' Ronchetti and Chi-Yun Hsu at UCLA
- 2015-2016 Ashay Burungale at U. Arizona
- 2005-2009 Dragos Ghioca, Byoung-Du Kim, Ming-Lun Hsieh, Mahesh Agarwal,  
 Soroosh Yazdani at McMaster

### **GRADUATE SUPERVISION**

- 2021 Casey Fu, Ph.D. Thesis, Computing conductors of Kummer extensions via Galois  
 module structure, UCLA

- 2018 Jun Wang, Ph.D. Thesis, Invariants of modular curves and Sharifi's conjectures, University of Arizona
- 2018 Jun Wang, Ph.D. Thesis, Invariants of modular curves and Sharifi's conjectures, University of Arizona
- 2018 Sheng-Chi Shih, Ph.D. Thesis, On congruence modules related to Hilbert Eisenstein series, University of Arizona
- 2016 Ronnie Scott Williams, Ph.D. Thesis, Level compatibility in the passage from modular symbols to cup products, University of Arizona
- 2016 Ding Ma, Ph.D. Thesis, Relations among multiple zeta values and modular forms of low level, University of Arizona
- 2015 Kevin Powell, Ph.D. Thesis, Modular symbols modulo Eisenstein ideals for Bianchi spaces, University of Arizona
- 2015 Matthew Lafferty, Ph.D. Thesis, Eichler-Shimura cohomology groups and the Iwasawa main conjecture, University of Arizona
- 2012 Dong Quan Nguyen, Ph.D. Thesis, Nonexistence of rational points on certain varieties, University of Arizona
- 2011 Richard Gottesman, M.S. Thesis, Some conductors of Kummer extensions of local fields, University of Arizona
- 2010 Meng Fai Lim, Ph.D. Thesis, Duality over  $p$ -adic Lie extensions of global fields, McMaster University
- 2006 Tara Davis, M.S. Thesis, Computations in Galois cohomology and Hecke algebras, McMaster University

**CITIZENSHIP** U.S.A.