

**Employment**

- **University of Arizona**  
Associate Professor, 2011-present  
Assistant Professor, 2005-2011
- **McGill University**  
NSERC Postdoctoral Fellow, 2001-02 and 2003-04  
CICMA Postdoctoral Fellow, 2004-05
- **Institut des Hautes Études Scientifiques**  
NSF International Research Fellow, 2002-03

**Education**

- **Harvard University** (1996-2001)  
Ph.D., Mathematics, June 2001  
A.M., Mathematics, June 1998  
Doctoral Advisor: Richard L. Taylor
- **University of British Columbia** (1992-96)  
B.Sc., Mathematics, May 1996

**Grants and awards**

- NSF grant DMS-1135049, *Canada/USA Mathcamp: Research in pairs and scholarships for students*, PI, 2011-2014, \$76,608
- NSF grant DMS-1054032, *CAREER: p-adic and mod p Galois representations*, PI, 2011-2016, \$409,994
- NSF DMS-0901049, *p-adic and mod p Galois representations*, PI, 2009-2012, \$150,000
- NSF DMS-0852464, *Southwest Center for Arithmetic Geometry*, PI (with four co-PIs), 2009-2012, \$447,939
- NSF DMS-0602287, *Southwest Center for Arithmetic Geometry*, PI (with four co-PIs), 2006-2009, \$416,493
- NSF DMS-0600871, *p-adic and mod p Galois representations, and generalized Breuil-Mézard conjectures*, PI, 2006-2009, \$96,675
- University of Arizona College of Science Distinguished Early Career Teaching Award, 2009
- MAA Tensor-SUMMA grant, PI (with one co-PI), 2008-2009, \$5,180
- MAA Tensor-SUMMA grant, PI (with one co-PI), 2007-2008, \$5,740
- NSF OISE-0107331, *International Research Fellowship Program: Modularity of geometric Galois representations*, PI, 2002-2003
- William Lowell Putnam graduate fellowship, 1996-2001

**Visiting positions**

- **Northwestern University**  
Visiting faculty, September 2011-August 2012
- **Université Paris XI**  
Visiting Professor, January-February 2010
- **Max-Planck Institut für Mathematik**  
Visiting researcher, June 2010; May-July 2008; January-June 2006;  
June 2002
- **Clay Mathematics Institute**  
Liftoff Researcher, June-August 2001

**Publications**

1. *Crystalline extensions and the weight part of Serre's conjecture*, with Toby Gee and Tong Liu, preprint.
2. *Serre weights for mod  $p$  Hilbert modular forms: the totally ramified case*, with Toby Gee, to appear, *J. Reine Angew. Math.*
3. *Serre weights for quaternion algebras*, with Toby Gee, *Compositio Math.* 147 (2011), no. 4, 1059–1086
4. *Poids de l'inertie modérée de certaines représentations cristallines*, with Xavier Caruso, *J. Théorie des Nombres de Bordeaux* 22 (2010), 79–96
5. *Polygones de Hodge, de Newton et de l'inertie modérée des représentations semi-stables*, with Xavier Caruso, *Mathematische Annalen* 343 (2009), 773–789
6. *Polynomials, meanders, and paths in the lattice of noncrossing partitions*, *Transactions of the A.M.S.* 361 (2009), 3083–3107
7. *Solutions to  $x^3 = y^2$  in  $\mathrm{PSL}(2, \mathbf{F}_q)$* , appendix to “Generalised knot groups distinguish the square and granny knots” by Christopher Tuffley, *J. of Knot Theory and its Ramifications* 18 (2009), no. 8, 1129–1157
8. *Breuil modules for Raynaud schemes*, *Journal of Number Theory* 128 (2008), 2939–2950
9. *Harmonic algebraic curves and noncrossing partitions*, with Jeremy Martin and Ted Singer, *Discrete and Computational Geometry* 37 (2007), 267–286
10. *On a Conjecture of Conrad, Diamond, and Taylor*, *Duke Math. Journal* 128 (2005), no. 1, 141–197
11. *Modularity of some potentially Barsotti-Tate Galois representations*, *Compositio Math.* 140 (2004), no. 1, 31–63

12. *The maximum number of points on a curve of genus 4 over  $\mathbb{F}_8$  is 25*, with an appendix by Kristin Lauter, *Canad. J. Math* 55 (2003), no. 2, 331–352
13. *A Note on the Symmetric Powers of the Standard Representation of  $S_n$* , with Richard P. Stanley, *Electron. J. Combin.* 7 (2000), no. 1, Research Paper 6, 8 pp

**Books edited**

- *p-adic geometry: lectures from the 2007 Arizona Winter School*, co-edited with Dinesh Thakur, University Lecture Series 45, American Mathematical Society, Providence, RI, 2008.

**Students advised**

- Chol Park, Ryan Smith (Ph.D. students in progress)

**Service**

- Co-director, Institute for Mathematics and Education, 2006-2007
- Referee for *Acta Arithmetica*, *American Mathematical Monthly*, *Commentarii Math. Helvetici*, *Communications in Algebra*, *Compositio Mathematica*, *Contemporary Communications in Mathematics*, *Duke Mathematical Journal*, *Electronic Journal of Combinatorics*, *Journal für die Reine und Angewandte Mathematik*, *Journal of Algebra*, *Journal of Number Theory*, *Mathematische Annalen*, *Mathematische Zeitschrift*, *Transactions of the A.M.S.*
- Grant proposal panelist for NSF and NSA (multiple times)
- NSF DMS Committee of Visitors, April 2010
- Reviewer for *Mathematical Reviews*, 2003 to present
- Member of the Committee on the American Mathematics Competitions Advisory Board (MAA), 2002 to 2008
- Editor of the Challenge Board Problems section of the journal *Cruz Mathematicorum*, January 1998-December 2001

**Conferences**

- Co-organizer of *Stark-Heegner points*, Arizona Winter School, March 2011
- Co-organizer of *Number theory and dynamics*, Arizona Winter School, March 2010
- Co-organizer of *Quadratic forms*, Arizona Winter School, March 2009
- Co-organizer of *Special functions and transcendence*, Arizona Winter School, March 2008

- Co-organizer of *p-adic geometry*, Arizona Winter School, March 2007
- Co-organizer of *p-adic representations, modularity, and beyond*, American Institute of Mathematics, February 2006

**Mathcamp**

Canada/USA Mathcamp is a 5-week-long summer program for mathematically talented high school students.

- *Deputy director*, Canada/USA Mathcamp, 2002 to present
- *Faculty member*, Mathcamp 2003, 2004, 2005, 2006, 2008, 2010
- *Academic coordinator*, Mathcamp 2001, 2002
- *Teacher and mentor*, Mathcamp 1996, 1997, 1998, 1999, 2000

**Invited Talks**

- Mini-course at Pohang Mathematics Institute, POSTECH, South Korea, January 2011
- Yale University Number Theory and Algebraic Geometry Seminar, November 2010
- University of Arizona Algebra and Number Theory Seminar, two talks, September 2010
- ICM Satellite on automorphic forms and number theory, Goa, India, August 2010
- University of Arizona Algebra and Number Theory Seminar, April 2010
- Galois Trimester mini-course, Institut Henri Poincaré, Paris, February 2010
- Université Paris VI Automorphic Forms Seminar, January 2010
- Northwestern University Number Theory Seminar, November 2009
- Tata Institute for Fundamental Research *p*-adic semester (2 talks), Mumbai, India, November-December 2008
- SUNY-Buffalo Algebra Seminar, November 2008
- University of Massachusetts Number Theory Seminar, October 2008
- Caltech Number Theory Seminar, October 2008
- University of Arizona Algebra and Number Theory Seminar, September 2008
- Max-Planck Institut für Mathematik Number Theory Seminar, Bonn, Germany, June 2008
- Special Session on Modular Forms and Modularity, AMS Winter

- Meeting, January 2008
- Summer School on Serre's conjecture, Luminy, France, July 2007
  - NCTS Number Theory Seminar, Taiwan, May 2007
  - NCTS Conference on Galois Representations and Function Field Arithmetic, Taiwan, May 2007
  - University of Georgia Number Theory Seminar, December 2006
  - MASS Colloquium, Penn State, September 2006
  - University of Arizona Algebra and Number Theory Seminar, September 2006
  - ETH-Zürich Number Theory Seminar, May 2006
  - Alexander von Humboldt Foundation Meeting in Bonn, April 2006
  - Max-Planck Institut für Mathematik Oberseminar, March 2006
  - University of Arizona Algebra and Number Theory Seminar, series of three talks, August/September 2005
  - Québec-Vermont Number Theory Seminar, April 2005
  - University of Iowa Colloquium, February 2005
  - CUNY College of Staten Island Colloquium, February 2005
  - University of Arizona Colloquium, February 2005
  - University of Colorado Colloquium, February 2005
  - University of Georgia Colloquium, February 2005
  - University of Waterloo Colloquium, January 2005
  - Ohio State Algebraic Groups Seminar, January 2005
  - Special Session on Arithmetic Geometry, CMS Winter Meeting, December 2004
  - U.C.L.A. Number Theory Seminar, November 2004
  - Canadian Number Theory Association, June 2004
  - Québec-Vermont Number Theory Seminar, February 2004
  - Microsoft Research, July 2003
  - I.H.E.S. (C. Soulé seminar), February 2003
  - University of Münster (P. Schneider seminar), February 2003
  - Max-Planck Institut für Mathematik Number Theory seminar, February 2003
  - Harvard Modular Forms seminar, January 2003
  - U.B.C. Number Theory seminar, January 2003

- Mini-course on étale cohomology, Langlands Program Workshop, CRM, April 2002
- University of Toronto Number Theory Seminar, February 2002
- Ohio State Number Theory Seminar, October 2001
- Québec-Vermont Number Theory Seminar, October 2001
- Harvard Number Theory Seminar, April 2001
- Caltech Number Theory Seminar, January 2001

**Memberships**

- American Mathematical Society, 1996-2002, 2005-present

**Address**

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**Personal**

Dual U.S. and Canadian citizen, born September 12, 1977