

Professional Preparation

Northern Arizona University

University of California at **Berkeley****Harvard University**

Mathematics, B.S. 1994

Mathematics, Ph.D. 2000

NSF postdoc, 2000–2004

Appointments

- Associate Professor of Mathematics (with tenure), University of Washington, September 2006–present.
- Associate Professor of Mathematics (with tenure), UC San Diego, July 2005–June 2006.
- Benjamin Peirce Assistant Professor of Mathematics, Harvard University, July 2001–May 2005.
- NSF Postdoctoral Research Fellowship under Barry Mazur at Harvard University, August 2000–May 2004.
- Clay Mathematics Institute Liftoff Fellow, Summer 2000.

Most Relevant Publications

- *Explicitly Computing Modular Forms* (284 page), Graduate Studies in Mathematics (AMS), 2007, with an appendix by Paul Gunnells.
- *Verification of the Birch and Swinnerton-Dyer Conjecture for Specific Elliptic Curves*, with G. Grigorov, A. Jorza, S. Patrikis, and C. Patrascu (26 pages), 2005, to appear in Mathematics of Computation.
- *Computation of p -Adic Heights and Log Convergence*, with B. Mazur and J. Tate (36 pages), 2006, to appear in Documenta Mathematica.
- *Average Ranks of Elliptic Curves: Tension Between Data and Conjecture*, with B. Bektemirov, B. Mazur, W. Stein, and M. Watkins, to appear in Bulletins of the AMS (2006).
- *Visible Evidence for the Birch and Swinnerton-Dyer Conjecture for Rank 0 Modular Abelian Varieties* (31 pages), with A. Agashe, to appear in Mathematics of Computation.

Other Publications

- *The Modular Degree, Congruence Primes and Multiplicity One*, with A. Agashe and K. Ribet (16 pages), 2005, to appear in Documenta Math.
- *Studying the Birch and Swinnerton-Dyer Conjecture for Modular Abelian Varieties Using Magma* (22 pages), to appear as a chapter in the Springer-Verlag book “Computational Experiments in Algebra and Geometry”.

- *Shafarevich-Tate Groups of Nonsquare Order*, Progress in Math., **224** (2004), 277–289, Birkhauser.
- *Constructing Elements in Shafarevich-Tate Groups of Modular Motives*, (19 pages) with N. Dummigan and M. Watkins, “Number theory and algebraic geometry—to Peter Swinnerton-Dyer on his 75th birthday”, Ed. by M. Reid and A. Skorobogatov.
- $J_1(p)$ has connected fibers, with B. Conrad and B. Edixhoven, Documenta Math., **8** (2003), 331–408.

Synergistic Activities

- **Research Tools:** Principal author of SAGE (over 100000 lines of new code), which is a major new piece of software. Author of the modular forms, modular symbols and modular abelian varieties parts of the Magma computer algebra system (425 pages (26000 lines) of code plus documentation). These are tools used by mathematicians who do computations with modular forms.
- **Databases:** Created and maintain the Modular Forms Database. This contains continually expanding data about elliptic curves and modular forms: <http://modular.math.washington.edu/Tables/>.
- **Outside Service:** IDA/CCR consultant. Also, Defense Science Study Group member 2002–2003: DSSG is a DARPA funded program administered by the Institute for Defense Analysis; paper on GPS vulnerabilities.
- **Outreach:** SIMUW 2006; Canada/USA MathCamp mentor (2002); Several Math Circles talks in Boston.

Collaborators and Other Affiliations

- **Coauthors:** A. Agashe (Florida State U.), K. Buzzard (Imperial College, London), R. Coleman (UC Berkeley), B. Conrad (Univ. of Michigan), N. Dummigan (Sheffield, UK), S. Edixhoven (Leiden, Netherlands), F. Leprévost (Univ. Joseph Fourier, Technische Univ. Berlin), E. V. Flynn (Liverpool, UK), D. Kohel (Univ. of Sydney), B. Mazur (Harvard), L. Merel (Paris 6), K. Ribet (UC Berkeley), E.F. Schaefer (Santa Clara Univ.), M. Stoll (Inter. Univ. Bremen, Germany), J. Tate, H. A. Verrill (Louisiana State), M. Watkins (Bristol.), J.L. Wetherell (CCR, San Diego)
- **Graduate and Postdoctoral Advisors:**
 - **Ph.D. adviser:** Hendrik Lenstra, University of Leiden, Netherlands.
 - **NSF Postdoctoral adviser:** Barry Mazur, Harvard University.
- **Thesis Students:** 2 Ph.D. students: Robert Bradshaw’s Ph.D. thesis at Univ. of Washington and Ifiti Burhanuddin’s at Univ. of Southern California. Advised eight undergraduate senior theses at Harvard.