

Robert L. Miller

Curriculum Vitae

(315) 247-9427
<http://www.rlmiller.org>
rlmill@math.washington.edu

Preprints

1. *Adinkras for Clifford Algebras, and Worldline Supermultiplets*, with Doran *et al.*, [arXiv:0811.3410](https://arxiv.org/abs/0811.3410), 2008.
2. *Topology Types of Adinkras and the Corresponding Representations of N-Extended Supersymmetry*, with Doran *et al.*, [arXiv:0806.0050](https://arxiv.org/abs/0806.0050), 2008.

Affiliations

- Mathematical Sciences Research Institute**, 2010–2011.
- Postdoctoral Fellow, Spring semester program on arithmetic statistics
 - Teaching assistant, Summer graduate workshop on elliptic curves
- University of Warwick**, 2010.
- Visiting Scholar, Autumn quarter
- University of Washington**, 2005–2010.
- Ph.D. in Mathematics
- Syracuse University**, 2001–2005.
- B.S. in Mathematics
 - B.A. in Philosophy

Invited Talks

- *Computationally Verifying the Birch and Swinnerton-Dyer Formula*, December 2009; Clay Mathematics Institute, Boston.
- *Explicit 3-descent*, November 2009; Advanced Number Theory Seminar, University of Washington, Seattle (UW).
- *Fast Compiled Graphs in Sage*, June 2009; Sage Days 16, Universitat Politècnica de Catalunya, Barcelona, Spain.
- *An Algorithm for Proving BSD for a Given Elliptic Curve of Rank 0 or 1*, May 2009; Algorithms and Number Theory, Schloss Dagstuhl, Germany.
- *The Theory of Doing a p-Descent*, May 2009; Advanced Number Theory Seminar, UW.
- Panelist, *Using Open Source Software (OSS) for Undergraduate Courses*, January 2009; Joint Mathematics Meetings (JMM), Washington, D.C.
- *Coding Theory and Combinatorics in Sage*, January 2009; AMS Special Session on SAGE and Mathematical Research Using OSS, 2009 JMM, Wash., D.C.
- *The Sato-Tate Conjecture and its Partial Proof*, November 2008; Number Theory and Computation Seminar, UW.
- *Generating Objects Modulo the Action of a Finite Permutation Group*, October 2008; Sage Days 10, LORIA, Nancy, France.
- *Classifying Self-Orthogonal Binary Codes*, April 2008 Undergraduate Mathematical Sciences Seminar, June 2008 Crypto Seminar, UW.
- *Software in Modern Research*, April 2008; Math & C.S. Seminar, Bard College.
- *Enumeration via Permutations*, February 2008; Sage Days 7, IPAM UCLA.
- *Combinatorial Generation*, November 2007; Sage Seminar, UW.
- *Intro. to Clifford Algebras*, October 2007; Math Club, UW.
- *Intro. to Hamiltonian Quantum Mechanics* (two parts), October 2007; Superseminar, UW.
- *What is Supersymmetry?*, September 2007; Grad Student Seminar, U of Wyoming.
- *Canonical Augmentation*, September 2007; Adinkra Workshop, Pepperdine.
- *Graph Embeddings and Combinatorial Flags*, August 2007; REU, UW.

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- *Opening Graph Automorphisms*, March 2007; SAGE Seminar, UW.
- *Intro. to the SAGE Graph Class*, February 2007; SAGE Days 3, IPAM UCLA.
- *The State of Graph Theory Software*, October 2006; SAGE Seminar, UW.
- *Archimedes of Syracuse*, April 2005; Pi Mu Epsilon, Syracuse University (SU).
- *Introduction to Fuzzy Logic*, January 2005; Pi Mu Epsilon, SU.

Honors

- *NSF VIGRE Graduate Fellowship*, 2008–2009, 2009–2010, UW.
- *Google grant* to work on partition backtrack software, Summer 2008, UW.
- *Archimedes Prize* for Undergraduate Mathematics, 2004, SU.

Seminars and Colloquia

- Symbolic Computation in Differential Algebra and Special Functions; July 17–22, 2010, Research Institute for Symbolic Computation, Austria.
- Rational Points 3; July 7–9, 2010, Schloss Thurnau, Germany.
- Sage Days 23: Number Theory; July 5–6, 2010, U. v. Leiden, Holland.
- Summer graduate workshop on elliptic curves; June 21 – July 2, 2010, MSRI.
- Computational Methods for Function Fields; May 24–28, 2010, Seattle, WA.
- Computer Methods for L -functions and Automorphic Forms; March 22–26, 2010; Centre de recherches mathématiques, Montréal.
- Sage Days 19; Jan 16–20, 2009, Seattle, WA.
- Sage Days 18; Dec 1–5, 2009; Clay Mathematics Institute, Boston.
- Sage Days 17; Sept 14–20, 2009, Lopez Island, WA.
- Sage Days 16 (Organizer); June 22–27, 2009, U. Poly. Catalunya, Barcelona.
- Algorithms & Number Theory; May 24–29, 2009, Schloss Dagstuhl, Germany.
- Sage Days 15; May 16–21, 2009, UW.
- Sage Days 12: Bug Smash; January 21–24, 2009, UC San Diego.
- 2009 AMS/MAA Joint Math. Meetings; January 4–9, 2009, Washington, D.C.
- Sage Days 10; October 10–15, 2008, Nancy, France.
- Number Theory and Physics at the Crossroads; Sep. 21–26, 2008, Banff.
- Sage Days 9: Graphics and Visualization; Aug. 8–16, 2008, Simon Fraser U.
- Workshops on Modular Forms and L -functions; Jun. 16–27, 2008, UW.
- Sage Developer Days 1; Jun. 13–20, 2008, UW.
- Supersymmetry conference; Apr. 7–14, 2008, Bard College.
- Arizona Winter School 2008; Mar. 14–20, 2008, U. of Arizona.
- Consultation visit with Godsil and Royle; Mar. 4–10, 2008, U. of Waterloo.
- Sage Days 7: Combinatorics (Organizer); Feb. 4–10, 2008, IPAM UCLA.
- Sage Seminar (Organizer); Winter & Spring, 2008, UW.
- Joint Mathematics Meetings (Exhibitor); January 2008, San Diego.
- Cambridge Workshop on Codes and Supersymmetry; December 2007, Harvard Science Center (informally).
- Superseminar (Organizer); 2007–8, UW.
- 2007 Workshop on Supersymmetry, Graphs, and Codes; September 2007, Pepperdine.
- International Symposium on Symbolic and Algebraic Computation;

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July 2007, U. of Waterloo.

- Workshop on Supermultiplets and Supersymmetric Quantum Mechanics; June 2007, UW.
- Pacific Northwest Number Theory Conference; May 2007, UW.
- SAGE Days 2–4; 2006–8, UW and UCLA.
- Pacific Northwest Geometry Seminar; October 2006, Portland State.
- Annual New York State Regional Graduate Mathematics Conference; March 2005, SU.
- Pi Mu Epsilon (President); 2004–5, SU.

Computation

- Implemented two-isogeny descent for computing the rank of an elliptic curve, which is faster than the leading competition (MAGMA) by an order of magnitude, 2009.
- Coauthored the grant proposal for NSF SCREMS 2008: The Computational Frontiers of L-Functions, Lie Groups, and Supersymmetry, which was awarded \$106,869 for computing resources at the University of Washington, and was called “probably the best of this year’s SCREMS proposals” by the program director.
- Classification of doubly even binary linear codes of length $n \leq 28$ and maximal such for length $n \leq 32$, (http://www.rlmiller.org/de_codes/) 2008.
- Canonical labeling, isomorphism and automorphism groups for graphs, binary codes and other incidence structures, 2007–08.
(Used centrally in Armin Straub’s Ph.D. thesis [arXiv:0805.2403](https://arxiv.org/abs/0805.2403) and in [arXiv:0906.1437](https://arxiv.org/abs/0906.1437))

Teaching

University of Washington

- *Linear Analysis*, Autumn 2008 and Spring 2010.
- *Intro. to Differential Equations*, Summer 2008.
- *Arts and Sciences Mathematical Computing GSA*, Winter and Spring 2008.
- *Inverse Problems in Electrical Networks REU*, Summer 2007 (TA).
- *Curves and Surfaces III*, Spring 2007 (TA).
- *Calculus I, II and III*, Autumn 2005–Winter 2007 (TA, Tutor).

Syracuse University

- *Calculus*, 2002 – Spring 2005 (TA, Tutor).