

# Cameron W. McLeman

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## Education:

- 2002– *University of Arizona*, Tucson, AZ  
Ph.D. in Mathematics, May 2008 (expected).  
Thesis: *A Golod-Shafarevich Equality and  $p$ -Tower Groups*  
Advisor: William McCallum  
Passed comprehensive oral examination: May, 2005.  
Topic: *Euler Systems and Class Numbers*.  
Passed minor (linguistics) comprehensive examination: July, 2006.  
Topic: *Formal Foundations*.
- 1998–2002 *Harvey Mudd College*, Claremont, CA  
B.S. in Mathematics with Honors, June 2002  
Thesis:  *$p$ -adic Dynamics and Formal Groups*.  
Advisor: Dr. Christopher Towse

## Academic Honors and Awards:

- Spr. 2008 VIGRE Fellowship  
Fall 2007 VIGRE Fellowship  
Sum. 2007 VIGRE Fellowship  
Spr. 2007 Outstanding Graduate Teaching Assistant  
Spr. 2006 Galileo Circle Scholar  
Sum. 2004 VIGRE Fellowship  
Sum. 2003 VIGRE Fellowship  
Spr. 2003 VIGRE Fellowship  
Fall 2002 VIGRE Fellowship  
2002 Robert T. Borrelli Clinic Team Award for Outstanding Achievement  
2001 Robert T. Borrelli Clinic Individual Award for Outstanding Achievement  
1998 SIAM MCM Outstanding Accomplishment Award

## Research Interests:

Algebraic number theory, arithmetic geometry, class field theory, profinite groups, homological algebra, category theory, cohomology of global fields.

**Patents and Published Papers:**

- McLeman, Cameron. *A Golod-Shafarevich Equality and  $p$ -Tower Groups*. In preparation.
- McLeman, Cameron. *Class Field Towers over Quadratic Imaginary Number Fields*. To appear in *Annales des Sciences Mathématiques du Québec*, 2008.
- Lesley Ward, Adrian Jensen, Justin Lyon, Cameron McLeman, and Bryan Tysinger. *Automatic Threshold Setting for Quantitative Polymerase Chain Reaction*. U.S. Patent No. 71,188,030 B2. March 6, 2007.
- Little, Colin and McLeman, Cameron. *Improved Computer Software for the Teaching of Ordinary Differential Equations*. Proceedings of the 2nd International conference on the Teaching of Mathematics. John Wiley & Sons, 2002.
- McLeman, Cameron. *Hyperelliptic Curve Cryptography*. Paper prepared for ViaSat, Inc. Published internally. Fall, 2002.
- Greene, Joshua, Cameron McLeman, and David Rudel. *Hexagonal Packing and other Real World Phenomena*. UMAP Journal 20.3; Fall 1999: 287-297.

**Teaching Experience and Vertical Integration:**

- “Super TA,” Fall 2007: Homological Algebra.
- Research Assistant, Spring 2007: For “NSF Director’s Award for Distinguished Teaching Scholars – *Making Connections: Joint Analysis of School Mathematics Problems*.”
- Graduate Teaching Assistant, 2002-present. Courses taught through Fall 2006: College Algebra (twice), Precalculus, Brief Calculus, Calculus I, Calculus II, Linear Algebra (twice), Vector Calculus.
- Fall 2006: Guest lecturer on “Elementary Number Theory” in the undergraduate Putnam exam preparation course Math 294a.
- Fall 2006 - present: Created and ran the AAASK seminar on algebraic and arithmetic geometry.
- Undergraduate Research Assistant Supervisor, Summer 2006: Advised URA Alaina Sandhu on *Arithmetic Derivatives and Cunningham Chains*.
- “Super TA,” Fall 2005 - Spring 2006: Algebraic Number Theory I and II.
- Senior Graduate Student Assistant for Graduate Integration Workshop (Summers, 2004 - 2007).
- Middle school math workshop on Rubik’s cube. Dec 1, 2003.

**Funded Conference Attendances:**

- (Plenary Speaker) A Conference in Honour of John Labute - Centre de Recherches Mathématiques, Montréal, Québec, November 15-16, 2007.
- (Participant) Graduate Student Warm-Up Workshop for the AMS Summer Institute in Algebraic Geometry - Seattle, Washington, July 18-22, 2005.
- (Participant) 2005 Arizona Winter School on Fundamental Groups in Arithmetic - Albuquerque, New Mexico, March 12-16, 2005.
- (Participant/Speaker) 2004 Arizona Winter School on Number Theory and Physics - Austin, Texas, March 13-17, 2004.
- (Speaker) 2nd International Conference on the Teaching of Mathematics - University of Crete, Greece, July 1-6, 2002.
- (Participant) 5th Workshop on Elliptic Curve Cryptography - Waterloo, October 29-31, 2001.
- (Participant) Combinatorial Aspects of Geometry and Topology - Rice University, April 6-8, 2001.
- (Speaker) 6th SIAM Conference on Optimization - Atlanta, GA, May 10-12, 1999.

**Service Activities:**

- Graduate representative to the Entry-Level Committee, 2007-present.
- PlanetMath Content Committee (<http://www.planetmath.org>), 2007-present.
- Organizer and Co-founder, Department Tea, 2006-present.
- Organizer and Co-founder, AAASK seminar, 2006-present.
- Organizer, Mathematics Graduate Colloquium, 2004-2005.

**Selected Lectures/Talks Given:**

- *The Zassenhaus Filtration of Class Field Tower Groups*. Conference in Honour of John Labute, McGill University. 11/07.
- *Dimension Subgroups of some Interesting Galois Groups*. The Southwestern Group Theory Day Conference. University of Arizona. 10/07.
- *Spectral Sequences and Applications to Spheres*. Mathematics Graduate Student Colloquium, University of Arizona. 9/07.
- *The Ax-Sen-Tate Theorem*. Galois Representations Seminar, University of Arizona. 4/07.
- *The Mathematics of English and the English of Mathematics*. Willamette Mathematics Colloquium, Willamette University. Salem, Oregon. 3/07.
- *Galois Cohomology, I-IV*. 4-part lecture series in Dinesh Thakur's Algebraic Number Theory Course. University of Arizona. 2/06.
- *The Failure of Unique Factorization*. Claremont Algebra and Combinatorics Seminar, Claremont Colleges. 10/05.
- *The Combinatorics of Newton Polytopes*. 2004 Arizona Winter School on Number Theory and Physics, Austin, Texas. 03/04.
- *Improved Computer Software for the Teaching of Ordinary Differential Equations*. 2nd International Conference on the Teaching of Mathematics, University of Crete in Hersonissos, Greece. 07/02.
- *Hexagonal Packing and Other Real-World Phenomena*. Sixth SIAM Conference on Optimization. Atlanta, GA. 05/99.

**Additional Lectures/Talks:**

(MGSC = Mathematics Graduate Student Colloquium)

- *Invariants of Tower Groups*. Group Theory Seminar, University of Arizona. 3/07.
- *Higher-Dimensional Intersection Multiplicities*. AAASK Seminar. University of Arizona. 03/07.
- *Pointless Topology*. MGSC, University of Arizona, 2/07.
- *Pro-p-Groups*. Group Theory Seminar. University of Arizona. 1/07.
- *Elliptic Curve Cryptography*. (The Inaugural) Interscience Colloquium, University of Arizona. 9/06.
- *Using Golod-Shafarevich*. Algebra and Number Theory Seminar, University of Arizona. 9/06.
- *Class Field Towers: A Survey*. Algebra and Number Theory Seminar, University of Arizona. 5/06.
- *Abstract Nonsense*. MGSC, University of Arizona. 2/06.
- *An Introduction to Kolyvagin Systems*. MGSC, University of Arizona. 03/05.
- *Perfect Rulers, Crazy Dice, and Complex Analysis*. MGSC, University of Arizona. 12/04.
- *Herbrand, Stickelberger, and Thaine: The Annihilators*. MGSC, University of Arizona. 9/04.
- *Golay Codes and their Application to Just About Everything*. MGSC, University of Arizona. 04/04.
- *Schanuel's Conjecture and Periods of Non-Trivial Dimension*. MGSC, University of Arizona. 10/03.
- *p-adic Dynamics and Formal Groups: The Quest for Unity*. MGSC, University of Arizona. 01/02.