

CARL A. MILLER
Computer Science & Engineering Building
2260 Hayward St.
Ann Arbor, MI 48109
carlmi@umich.edu
<http://www.umich.edu/~carlmi/>

Birthdate: June 17, 1979
Birthplace: Washington, DC

Employment:

University of Michigan, Ann Arbor, 2007-2012
Research Fellow in Computer Science (2010-2012)
Assistant Professor of Mathematics, Adjunct in Computer Science (2009-2010)
Assistant Professor of Mathematics (2007-2009)

Education:

University of California-Berkeley
Ph. D. in Mathematics, 2007
Thesis title: *Cohomology of p -torsion sheaves on characteristic- p curves*
Thesis advisor: Arthur Ogus
Thesis committee members: Martin Olsson, Ori Ganor
Qualifying exam topics: algebraic geometry, commutative algebra,
algebraic topology (minor)

Duke University
B. S. in Mathematics, magna cum laude, 2001. Graduated with highest distinction.
Thesis title: *Exponential iterated integrals and solvable completions of the fundamental group of a manifold*
Thesis advisor: Richard Hain

Awards:

2001 National Defense Science & Engineering Graduate Fellowship
2001 The Julia Dale Prize (first prize) from the Duke mathematics department
2001 “Outstanding” designation in COMAP contest in modeling
2000 Phi Beta Kappa
2000 Top 16 on W. L. Putnam exam
1996 Top 6 on USA Math Olympiad and silver medal at International Math Olympiad

Research interests:

Quantum information theory
Theoretical computer science
Algebraic geometry and algebraic topology

Research papers:

- **Brett Hemenway, Carl A. Miller, Yaoyun Shi, and Mary Wootters. Upper bounds on the accuracy of an assisted classical channel.**
Preprint, available at <http://arxiv.org/abs/1201.1521>
- **Eric Chitambar, Carl A. Miller, and Yaoyun Shi. Deciding Unitary Equivalence Between Matrix Polynomials and Sets of Bipartite Quantum States.**
Quantum Information and Computation 11 (2011), no. 9&10, 0813-0819.
- **Eric Chitambar, Carl A. Miller, and Yaoyun Shi. Matrix Pencils and Entanglement Classification.**
Journal of Mathematical Physics 51, 072205 (2010).
- **Carl A. Miller. An Euler-Poincare bound for equicharacteristic etale sheaves.**
Algebra & Number Theory 4 (2010), no. 1, 21-45.
- **Carl Miller. Exponential iterated integrals and the relative solvable completion of the fundamental group of a manifold.**
Topology 44 (2005), no. 2, 351-373.

Conferences attended:

(talk titles are given in quotes)

QKD Summer School, Institute for Quantum Computing, Waterloo, Canada, summer 2011

Joint Mathematics Meetings, San Francisco, winter 2010
“**The Geometry of Multipartite Quantum Systems**”

The 9th International Conference on Finite Fields and Their Applications, University College, Dublin, Ireland, summer 2009
“**Equicharacteristic Galois representations of local function fields**”

New Challenges in Digital Communications, Vlora, Albania, summer 2008

Algebraic Geometry and Commutative Algebra, University of Illinois at Chicago, spring 2008

Journées Arithmétiques, University of Edinburgh, Scotland, summer 2007
“**Etale Cohomology on a Characteristic-p Curve**”

Arizona Winter School on p -adic Geometry, University of Arizona, Tucson, spring 2007

Western Algebraic Geometry Seminar, University of Utah, Salt Lake City, fall 2006

AMS Summer Research Institute in Algebraic Geometry (weeks 1-3), University of Washington, Seattle, summer 2005

Western Algebraic Geometry Seminar, Stanford University, spring 2003

Big Sky Discrete Mathematics Conference, University of Montana, Missoula, fall 2000

“Random Growth Models and the Longest Common Subsequence Problem”

Mathfest, UCLA, summer 2000

“Random Growth Models and the Longest Common Subsequence Problem”

Seminar talks:

University of Michigan Theoretical Computer Science Seminar, winter 2011

University of Michigan Theoretical Computer Science Seminar, fall 2010

University of Michigan Theoretical Computer Science Seminar, winter 2010

University of Michigan Theoretical Computer Science Seminar, winter 2009

University of Michigan Number Theory & Representation Theory Seminar, fall 2007

University of Michigan Algebraic Geometry Seminar, fall 2007

UC-Berkeley Algebraic Geometry Seminar, spring 2007

University of Michigan Algebraic Geometry Seminar, spring 2007

UC-Berkeley Number Theory Seminar, fall 2006

UC-Berkeley Algebraic Differential Equations Seminar, fall 2005

UC-Berkeley Representation Theory and Langlands Correspondence Seminar, fall 2004

UC-Berkeley Algebraic Differential Equations Seminar, spring 2004

Teaching experience:

Courses taught at the University of Michigan:

- EECS 376 (Foundations of Computer Science), winter 2010.
- Math 312 (Applied Modern Algebra), fall 2009.
- Math 567 (Introduction to Coding Theory), winter 2009.
- Math 425 (Introduction to Probability), fall 2008.
- Math 217 (Linear Algebra), winter 2008.
- Math 115 (Calculus I), fall 2007.

Teaching assistant at UC-Berkeley for four semesters (2005-2006).

Undergraduate seminar leader for Math 149S (Problem-Solving Seminar) at Duke, fall 1998 and fall 1999.

Counselor at the Ross Young Scholars Program at Ohio State University, summer 1998 and summer 1999.

Other employment:

Participated in the SCAMP summer program at the **Center for Communications Research in Princeton, NJ**, summer 2002.

Worked on voice-recognition software at the **Duke University Computer Science Department** under Prof. Alan Biermann during the summer of 2001.

Participated in the **PRUV Program at Duke University** (under Prof. Richard Hain) and the **Discrete Random Structures REU at East Tennessee State University** (under Prof. Anant Godbole), summer 2000.

Worked on 3-dimensional computer imaging in a microbiology lab under Dr. Julia Barsony at the **National Institutes of Health** during the summer of 1995.

References:

Prof. Yaoyun Shi
shiy@eecs.umich.edu
(734) 764-3308

Prof. Kevin Compton
kjc@umich.edu
(734) 763-9165