Curriculum Vitae: Claudia Miller

January 2011

Mathematics Dept
Syracuse University
Syracuse, NY 13244-1150

phone: (315) 443-1493
fax: (315) 443-1475
email: clamille@syr.edu

Research Interests: Commutative Algebra, Algebraic Geometry, Homological Algebra

Employment:

2003-present, Associate Professor, Syracuse University

Spring 2003, Postdoctoral Fellow, Mathematical Sciences Research Institute, Berkeley

Fall 2002, Visiting Assistant Professor, University of Nebraska

2001-2002, Assistant Professor, University of Toronto

2000-2001, Visiting Research Instructor, Michigan State University

1997-2000, Assistant Professor, University of Michigan

Education:

1997, Ph.D., University of Illinois at Urbana-Champaign
Advisor: Phillip Griffith Thesis: Hypersurface Sections: A Study of Divisor Class Groups and of the Complexity of Tensor Products.

1993, Certificate of Advanced Study, Cambridge University.

1990, M.S., University of Illinois at Urbana-Champaign.

1989, B.S., Georgia Institute of Technology (chemistry).

Grants and Awards:

2010-2013 NSF Grant, (DMS #1003384) $125,044

2008-2010 NSA Grant, (#H98230-08-1-0025).

2006-2008 NSA Young Investigator Grant, 2009 no-cost extension (#98230-06-1-0035).

2005 NSA Grant with Iyengar, Leuschke, and Singh for workshop at Minnowbrook.

2000-2004 NSF Grant, 2004-2007 no-cost extension, (DMS #0196121).

1998 Rackham Summer Research Grant, University of Michigan.

1997 Irving Reiner Award (award for best algebra thesis), University of Illinois.

1994, 1995 Nominated for departmental teaching award, University of Illinois.

1992-1993 and 1994-1995 National Needs Fellowship, University of Illinois.

1989-1992 NSF Graduate Fellowship, University of Illinois.

Professional Activities:

- Co-organizer for AMS Special Session on Commutative Algebra and Algebraic Geometry, Syracuse University, October 2010.
- Member of NSF Review Panel, 2008.
- Co-organizer for Route 81 Conference in Commutative Algebra and Algebraic Geometry, Syracuse University, Fall 2003, 2006, and 2009.

- Co-organizer for Workshop on Commutative Algebra and its Interactions with Other Fields, Minnowbrook Center, Syracuse University, August 2005.
- Lecturer (3 one hour talks) in Joint Summer Research Conference on Commutative Algebra (Local Cohomology) at Snowbird, June 2005, lectures published jointly as a book.
- Lecturer (4 one hour talks) at VIGRE Mini-Course "Classical Problems in Commutative Algebra", University of Utah, June 2004, notes available on their webpage.
- Referee multiple times for: Journal of Algebra, Journal of Pure and Applied Algebra, Proceedings of the AMS, Communications in Algebra.

Publications:

1. *A direct limit for limit Hilbert-Kunz for smooth projective curves* (H. Brenner and J. Li), submitted.
2. *On the (non)rigidity of the Frobenius endomorphism over Gorenstein rings* (H. Dao and J. Li), to appear in Algebra and Number Theory.
3. *Homology of perfect complexes* (with L. L. Avramov, R.-O. Buchweitz, and S. Iyengar), Advances in Mathematics, **223** (2010), 1731–1781.
4. *A Riemann-Roch formula for the blow-up of a nonsingular affine scheme* (with C.-Y. J. Chan), Journal of Algebra, **322** (2009), 3003–3025.
5. *24 Hours of Local Cohomology: the Snowbird Notes* (with S. Iyengar, G. Leuschke, A. Leykin, E. Miller, A. Singh, and U. Walther), book in the series AMS Graduate Studies in Mathematics **87** (2007).
6. *Homology over local homomorphisms* (with L. L. Avramov and S. Iyengar), American Journal of Mathematics, **128** (2006), no. 1, 23–90.
7. *The Frobenius endomorphism and homological dimensions*, Contemporary Mathematics **331** (2003), 207–234.
8. *Frobenius powers of complete intersections* (with L. L. Avramov), Mathematical Research Letters, **8** (2001), 225–232.
9. *Mixed ladder determinantal varieties* (with N. Gonciulea), Journal of Algebra, **231** (2000), 104–137.
10. *Intersection multiplicities over Gorenstein rings* (with A. Singh), Mathematische Annalen, **317** (2000), 155–171.
11. *A Frobenius characterization of finite projective dimension over complete intersections*, Mathematische Zeitschrift **233** (2000), 127–136.
12. *An explicit description of the Dennis trace map* (with R. Kantorovitz), Communications in Algebra **28** (2000), 1429–1448.
13. *Recovering divisor classes via their (t)-adic filtrations*, Journal of Pure and Applied Algebra **127** (1998), 257–271.
14. *Complexity of tensor products of modules and a theorem of Huneke-Wiegand*, Proceedings of the American Mathematical Society **126** No. 1 (1998), 53–60.

Departmental Service:

- Undergraduate Committee, 2009-2011.
- Advisor for Ph.D. student Kosmas Diveris, 2008-present.
- Faculty Advisor for Pi Mu Epsilon/Math Club, Syracuse University, 2005-2008, 2009-present.
- Advisor for a student's capstone project for honors program, 2009-2010.
- Algebra Qualifying Exam for Ph.D. students, Jan 2009 and Aug 2010.
- Algebra Preliminary Exam for Ph.D. students, Jan 2007.
- Freshman Advisor, 2009-2010.
- Hiring Committee (and Ad-Hoc Topology Hiring Committee), 2009-2010.
- Executive Committee, 2006-2008.
- Advisor for postdoctoral visitor Jinjia Li, 2006-2008.
- Ad-Hoc Committee on Standardizing the Syllabi for the MAT 295-296-397 Sequence, 2006.
- Undergraduate Committee, Syracuse University, 2004 - 2006.
- Independent study courses (with groups of students):
  Spring 2008 (MAT 890 Advanced Seminar: Topics in Algebra)
  Fall 2007 (MAT 890 Advanced Seminar: Topics in Algebra)
  Spring 2006 (MAT 290 Fractals)
  Spring 2005 (MAT 690 Algebraic Number Theory)
  Spring 2004 (MAT 290 Fractals)
- Panel on Applying for Jobs in Academia, MGO conference, Syracuse University, April 2006.
- Involved with starting up Pi Mu Epsilon again at Syracuse, Fall 2004 - Spring 2005.
- Presenter at Kovalevsky Day Festival (two 80 minute math sessions for high school girls), Syracuse University, November 2004.

Outreach:

- Panel speaker at Nebraska Conference for Undergraduate Women in Mathematics, Feb. 2004.
- Colloquium for Undergraduates, Hope College, 1998: Blowing Up Curves.

Invited Conference Talks and Workshops:

2010	Dec	CMS Special Session, Vancouver: "Limit Hilbert-Kunz multiplicities"
2009	Mar	AMS Special Session, Urbana: "Simpler limit Hilbert-Kunz multiplicities"
2008	Sep	CIRM (Luminy, France) Workshop: Commutative Algebra and its Interactions with Algebraic Geometry
	July	Conference in Honor of Melvin Hochster, University of Michigan: Commutative Algebra: Connections with Algebraic Topology and Representation Theory: "Limit Hilbert-Kunz multiplicities"
	May	Conference in Honor of Luchezar Avramov, University of Nebraska: Commutative Algebra and its Interactions: "On the nonrigidity of the Frobenius endomorphism"
	Jan	AMS Joint Meeting, San Diego: "On nonrigidity of Frobenius"
2007	June	BIRS (Banff, Canada) Workshop: Commutative Algebra and its Interaction with Algebraic Geometry
	Mar	AMS Special Session, Davidson: "A Riemann-Roch formula for the blow-up of a nonsingular affine scheme"
2006	Dec	CMS Meeting, Toronto: "A Riemann-Roch formula for the blow-up of a nonsingular affine scheme"
	May	CIRM (Luminy, France) Workshop: Commutative Algebra and its Interactions with Algebraic Geometry
2005	Sep	Conference in Honor of Phil Griffith, University of Illinois: "Hilbert polynomials over regular local rings via intersection theory on the blow-up"
	Aug	Minnowbrook Workshop on Commutative Algebra: "Hyperplane arrangements"
	June	Joint Summer Research Conference on Commutative Algebra, Snowbird UT: Three Lectures on Local Cohomology
	Apr	MFO (Oberwolfach, Germany) Workshop: Conference on Kommutative Algebra
2004	Dec	CMS Special Session, Montreal: "Extremal algebras"
	Nov	AMS Special Session, Nashville: "Extremal algebras"
	Sep	BIRS (Banff, Canada) Workshop: Commutative Algebra: Homological and Birational Theory
	May	AMS Special Session, Houston: "Extremal algebras"
2003	June	Workshop in Luminy, France, invited, but could not attend
	May	AMS Special Session, San Francisco State University: "Homological properties of the Frobenius endomorphism"
2002	Sep	KUMUNU Conference, University of Kansas: "Survey on methods of Koh and Lee"
	Mar	AMS Special Session, University of Michigan: "Frobenius and Multiplicities"
	Feb	Commutative Algebra Days Conference, University of Nebraska: "Frobenius and Multiplicities"
	Jan	AMS Special Session, San Diego: "Characteristic Zero Hilbert-Kunz Multiplicities"

2001	Oct	AMS Special Session, Williamstown: "Limit Hilbert-Kunz Multiplicities"
	June	Conference in Grenoble: "Frobenius powers of complete intersections"
	Mar	AMS Special Session, University of Kansas: "Frobenius powers of complete intersections"
2000		AMS Special Session, New York City: "Frobenius powers of complete intersections"
1999		AMS Special Session, Salt Lake City: "Mixed ladder determinantal varieties"
		AMS Special Session, Urbana: "Intersection multiplicities over Gorenstein rings"
1998		AMS Special Session, Baltimore: "Frobenius limits of finite length modules over complete intersection rings"
1996		AMS Student Special Session, Seattle Mathfest: "Complexity of Tensor Products and a Theorem of Huneke-Wiegand.
		AMS Special Session, Orlando: Divisor Class "Group of $A[[T]]$ and Lifting MCM Modules"

Invited Seminars and Colloquia:

2009	Nov	Yale University, Algebra and Lie Groups Seminar
	Apr	University of Illinois, Commutative Algebra Seminar
2008	Dec	University of Nebraska, Commutative Algebra Seminar
	Sep	CUNY, New York, Commutative Algebra Seminar
	Feb	University of Nebraska, Commutative Algebra Seminar
2006	Apr	University of Illinois, Commutative Algebra Seminar
2005	Feb	University of Utah, Commutative Algebra Seminar
2004	Nov	Cornell University, Commutative Algebra Seminar
	Feb	University of Nebraska, Commutative Algebra Seminar
2003	Jan	MSRI, Algebra Seminar
2002	Feb	New Mexico State University, Colloquium
	Jan	Syracuse University, Colloquium
2000		University of Michigan, Commutative Algebra Seminar
1999		University of Illinois, Commutative Algebra Seminar
		University of Utah, Commutative Algebra Seminar
1998		Hope College, Undergraduate Colloquium
1997		University of Missouri, Commutative Algebra Seminar

Teaching Experience:

- Courses taught at Syracuse University (2003-present):

  Introduction to Real Analysis (MAT 512), Fall 2010
  Linear Algebra (MAT 331), Fall 2010
  Calculus II (MAT 296), Fall 2010
  Introduction to Algebra II (MAT 632), Spring 2010
  Elements of Modern Mathematics (MAT 183), Spring 2010
  Capstone Project (MAT 499), Spring 2010
  Calculus II (MAT 296), Fall 2009
  Differential Equations (MAT 514), Fall 2009
  Advanced Seminar (MAT 890), Spring 2008
  Advanced Linar Algebra (MAT 531), Spring 2008
  Introduction to Real Analysis (MAT 512), Spring 2008
  Advanced Seminar (MAT 890), Fall 2007
  Rings and Modules (MAT 731), Fall 2007
  Linear Algebra (MAT 331), Fall 2007
  Introduction to Real Analysis (MAT 512), Spring 2007
  Rings and Modules (MAT 731), Fall 2006
  Linear Algebra (MAT 331), Fall 2006
  Calculus I (MAT 295), Fall 2006
  Independent Study: Fractals (MAT 290), Spring 2006
  Differential Equations (MAT 514), Fall 2005
  Linear Algebra (MAT 331), two sections, Fall 2005
  Independent Study: Algebraic Number Theory (MAT 690), Spring 2004
  Applied Linear Algebra (MAT 532), Spring 2005
  Calculus I (MAT 295), Fall 2004
  Topics in Algebra (MAT 830), Fall 2004
  Group Theory (MAT 636), Spring 2004
  Independent Study: Fractals (MAT 290), Spring 2004
  Linear Algebra (MAT 331), two sections, Fall 2003

- Courses taught at the University of Nebraska (Fall 2002):

  Linear Algebra (MATH 314), 2002

- Courses taught at the University of Toronto (2001-2002):

  Differential Equations (MAT 244), 2002
  Groups and Symmetries (undergraduate group theory) (MAT 301), 2001
  Calculus (MAT 135), 2001-2002

- Courses taught at Michigan State University (2000-2001):

  Differential Equations (MATH 235), 2001
  Calculus (MATH 132), 2000

- Courses taught at the University of Michigan (1997-2000):

  Topics in Commutative Algebra (MATH 615), 2000
  Graduate Commutative Algebra I (MATH 614), 1998
  Linear Algebra for Engineers (MATH 417), 1998, 1999
  Linear Algebra for Engineers (MATH 419), 1998
  Honors Calculus (MATH 176), 2000
  Calculus (MATH 115, 116), 1997-1999