

CURRICULUM VITAE

SEAN SATHER-WAGSTAFF

Contact Information

Office: Department of Mathematics, 300 Minard Hall, North Dakota State University,
Fargo, North Dakota 58105-5075, USA
Phone: (701)231-8105
Fax: (701)231-7598
Email: Sean.Sather-Wagstaff@ndsu.edu

Research Interests

Commutative Algebra, Homological Algebra

Education in Mathematics

PhD: University of Utah, 2000; Paul C. Roberts, advisor
Dissertation: *A Dimension Inequality for Excellent, Cohen-Macaulay Rings Related to the Positivity of Serre's Intersection Multiplicity*
MS: University of Utah, 1998; Paul C. Roberts, advisor
AB: University of California at Berkeley, 1993

Positions in Mathematics

2007– Assistant Professor, North Dakota State University
2006–2007 Visiting Assistant Professor, Kent State University
2005–2006 Assistant Professor, California State University, Dominguez Hills
2004–2005 Visiting Assistant Professor, University of Nebraska-Lincoln
2000–2004 NSF Mathematical Sciences Postdoctoral Research Fellow, VIGRE Research
Assistant Professor, University of Illinois at Urbana-Champaign
1999–2000 University Research Fellow, University of Utah
1999 Graduate Student Mentor, University of Utah
1995–1999 Teaching Fellow, University of Utah
1995 Instructor, San Francisco State University

External Funding

2009–2010 NSA Young Investigators Grant, \$30,000
2006 NSA Conference Grant, \$15,000
2001 NSF Mathematical Sciences Postdoctoral Research Fellowship, \$90,000

Honors and Fellowships

- 2007 President's professional development grant, North Dakota State University
- 2006 Early-career faculty member, University of Nebraska-Lincoln, Intensive Mathematics: a Mentoring, Education and Research Summer Experience
- 2006 Sally Casanova Memorial RSCAAP Mini-Grant, California State University, Dominguez Hills, University Committee on Research, Scholarship, and Creative Activity
- 2005, 2006 California State University, Dominguez Hills, Center for Teaching and Learning Travel Grants
- 2003 General Membership, Mathematical Sciences Research Institute, Spring Semester, Year-Long Program in Commutative Algebra
- 2002–2003 Incomplete List of Teachers Ranked as Excellent by Their Students, University of Illinois at Urbana-Champaign, listed three semesters
- 2001 NSF Mathematical Sciences Postdoctoral Research Fellowship, taken at University of Illinois at Urbana-Champaign; Sankar Dutta, supervisor
- 2000 Liftoff Mathematician, Clay Mathematics Institute
- 1999 Graduate Research Supplemental Award, Univ. of Utah College of Science
- 1999–2000 University Research Fellowship, University of Utah College of Science
- 1996 Outstanding Teaching Fellow, University of Utah Mathematics

Publications

1. *Multiplicities and a dimension inequality for unmixed modules*, J. Algebra **238**, 372–388 (2001).
2. *A dimension inequality for Cohen-Macaulay rings*, Trans. Amer. Math. Soc. **354**, 993–1005 (2002).
3. *Intersections of symbolic powers of prime ideals*, J. London Math. Soc. (2) **65**, no. 3, 560–574 (2002).
4. *On symbolic powers of prime ideals*, Commutative algebra. Interactions with Algebraic Geometry, Contemp. Math. **331**, 329–342 (2003).
5. *G-dimension over local homomorphisms. Applications to the Frobenius endomorphism*, with S. Iyengar, Illinois J. Math. **48** (2004) no. 1, 241–272.
6. *Complete intersection dimension for complexes*, J. Pure Appl. Algebra **190** (2004) no. 1–3, 267–290.
7. *Characterizing local rings via homological dimensions and regular sequences*, with S. Salarian and S. Yassemi, J. Pure Appl. Algebra **207** (2006) no. 1, 99–108.
8. *The set of semidualizing complexes is a nontrivial metric space*, with A. Frankild, J. Algebra **308** (2007) no. 1, 124–143.
9. *Reflexivity and ring homomorphisms of finite flat dimension*, with A. Frankild, Comm. Algebra **35** (2007) no. 2, 461–500.
10. *Semidualizing modules and the divisor class group*, Illinois J. Math. **51** (2007) no. 1, 255–285.
11. *Detecting completeness from Ext-vanishing*, with A. J. Frankild, Proc. Amer. Math. Soc. **136** (2008), no. 7, 2303–2312.
12. *Stability of Gorenstein categories*, with T. Sharif and D. White, J. London Math. Soc. (2) **77** (2008), no. 2, 481–502.

13. *An Euler characteristic for modules of finite G -dimension*, with D. White, *Math. Scand.* **102** (2008), no. 2, 206–230.
14. *Ascent of module structures, vanishing of Ext , and extended modules*, with A. J. Frankild and R. A. Wiegand, *Michigan Math. J.* **57** (2008), 321–337.
15. *A Cohen-Macaulay algebra has only finitely many semidualizing modules*, with L. W. Christensen, *Math. Proc. Cambridge Philos. Soc.*, to appear.
16. *Relations between semidualizing complexes*, with A. J. Frankild and A. Taylor, *J. Commutative Algebra*, to appear.
17. *Complete intersection dimensions and Foxby classes*, *J. Pure Appl. Algebra*, to appear.
18. *Descent via Koszul extensions*, with L. W. Christensen, *J. Algebra*, to appear.
19. *Gorenstein cohomology in abelian categories*, with T. Sharif and D. White, *J. Math. Kyoto Univ.*, to appear.
20. *Comparison of relative cohomology theories with respect to semidualizing modules*, with T. Sharif and D. White, submitted.
21. *On the number of semidualizing complexes*, submitted.
22. *AB -contexts and stability for Gorenstein flat modules with respect to semidualizing modules*, with T. Sharif and D. White, submitted.
23. *Modules of finite homological dimension with respect to a semidualizing module*, with S. Yassemi, submitted.
24. *Transfer of Gorenstein dimensions along ring homomorphisms*, with L. W. Christensen, preprint.

Invited Conference and Workshop Lectures

1. *Counting semidualizing complexes*, *Commutative Algebra: Connections with Algebraic Topology and Representation Theory*, University of Nebraska-Lincoln, May 2008
2. *Complete intersection dimension and Foxby classes*, *AMS Special Session on Free Resolutions*, DePaul University, Oct. 2007
3. *Ext-vanishing and ascent of module structures*, *BIRS workshop “Commutative Algebra and its Interaction with Algebraic Geometry”*, Banff, Canada, Jun. 2007
4. *Uniform annihilators for local cohomology*, *Route 81 Conference on Algebraic Geometry and Commutative Algebra*, Syracuse University, Oct. 2006
5. *Detecting completeness from Ext-vanishing*, *AMS Special Session on Commutative Algebra*, University of Utah, Sep. 2006
6. *Descent of semidualizing complexes*, *Homological Conjectures in Commutative Algebra; A Conference in Honor of Paul C. Roberts’ Sixtieth Birthday*, Snowbird, UT, May 2006
7. *Incomparability of semidualizing modules*, *AMS Special Session on Homological Aspects of Commutative Algebra*, Bard College, Oct. 2005
8. *Semidualizing modules and the divisor class group*, *Commutative Algebra Conference honoring the contributions of Phillip Griffith*, University of Illinois at Urbana-Champaign, Sep. 2005
9. *Descent of semidualizing modules*, *Nebraska Commutative Algebra Conference: WiegandFest*, University of Nebraska-Lincoln, May 2005
10. *Semidualizing modules*, *KUMUNU 6*, University of Kansas, Oct. 2004
11. *Semidualizing modules*, *AMS Special Session on Local and Homological Algebra*, Vanderbilt University, Oct. 2004

12. *Finiteness and structure of the set of semidualizing modules*, Workshop on Resolutions for Young Researchers, Cornell University, Oct. 2004
13. *Semidualizing modules and the divisor class group*, BIRS workshop “Commutative Algebra: Homological and Birational Theory”, Banff, Canada, Sep. 2004
14. *Koszul cohomology, Cohen structure theorem, and intersection multiplicities*, Four lectures in the mini-course “Classical Problems in Commutative Algebra”, University of Utah, June 2004
15. *A new characterization of Gorenstein rings*, AMS Special Session on the Homological Algebra of Commutative Rings, Houston, TX, May 2004
16. *The set of semidualizing complexes is a metric space*, AMS Special Session on Syzygies and Hilbert Functions, Florida State University, Mar. 2004
17. *Gorenstein Dimension of the Frobenius Endomorphism*, AMS-IMS-SIAM Summer Research conference, Commutative Algebra: Presentations by Young Researchers, Snowbird, UT, July 2003
18. *Complete Intersection Dimension for Complexes*, AMS Special Session on Commutative Algebra and Algebraic Geometry, San Diego, CA, Jan. 2002
19. *Symbolic Powers of Prime Ideals*, AMS Special Session on Commutative Algebra, Williams College, Oct. 2001
20. *Intersections of Symbolic Powers of Prime Ideals*, Colloque «Algèbre Commutative», Institut Fourier, Grenoble, France, July 2001
21. *Intersections of Symbolic Powers of Prime Ideals*, Algebra Weekend 2001, University of Missouri, Columbia, Apr. 2001
22. *A Dimension Inequality for Equidimensional Modules*, Centennial Celebration of Commutative Algebra, University of Nebraska-Lincoln, Apr. 2000
23. *A Conjecture of Kurano and Roberts Related to the Positivity of the Intersection Multiplicity of Serre*, AMS Special Session on Algebraic Geometry and Commutative Algebra, Washington, DC, Jan. 2000
24. *On a Conjecture of Kurano and Roberts*, Midwest Algebraic Geometry Conference, University of Missouri, Columbia, Oct. 1999
25. *Multiplicities and Localization*, AMS Special Session on Commutative Algebra, University of Utah, Sep. 1999
26. *Intersection Multiplicities and Powers of Ideals*, AMS Special Session on Algebraic Geometry and Commutative Algebra, University of North Texas, May 1999

Departmental Seminars and Colloquia Given¹

1. Short Course (ten lectures), School of Mathematics, Institute for Studies in Theoretical Physics and Mathematics, Tehran, Iran, Jul. 2008
2. Mathematics Department Colloquium and Algebra Seminar, Texas Tech University, Apr. 2008
3. Mathematics Department Colloquium, University of Copenhagen, Jan. 2007
4. Mathematics Department Colloquium, Kent State University, Nov. 2006
5. Summer Algebra Research Seminar, University of Nebraska-Lincoln, July 2006
6. Commutative Algebra Seminar, University of California at Riverside, Mar. 2006
7. Commutative Algebra Seminar, University of Nebraska-Lincoln, Feb. 2006

¹Seminars given at home institution not listed.

8. Mathematics Department Colloquium, California State University, Dominguez Hills, Nov. 2005
9. Mathematics Department Colloquium, University of Nebraska-Lincoln, Oct. 2004
10. Commutative Algebra Seminar, Purdue University, Oct. 2002
11. Commutative Algebra Seminar University of Kansas, June 2000 and Aug. 2002
12. Mathematics Department Graduate Colloquium, University of Illinois at Urbana-Champaign, Feb. 2002
13. Mathematics Department Graduate Colloquium, University of Utah, Jan. 2000
14. Mathematics Department Colloquium, San Francisco State University, Oct. 1999
15. Mathematics Department Undergraduate Colloquium, University of California at Berkeley, Oct. 1999
16. Mathematics Department Undergraduate Colloquium, University of Utah, Sep. 1999

Conferences and Special Sessions Co-organized

- 2008 Mathematics on the Northern Plains, North Dakota State University
- 2008 Special Session on Progress in Commutative Algebra, Joint Mathematics Meetings, San Diego, CA
- 2006 Kent Regional Algebra Weekend, Kent State University
- 2006 Homological conjectures in commutative algebra: A conference in honor of Paul C. Roberts, Salt Lake City, UT
- 2006 Special Session on Resolutions and Hilbert Functions, AMS Sectional Meeting, San Francisco, CA
- 2005 Special Session in Commutative Algebra, AMS Sectional Meeting, Lincoln, NE
- 2005 Special Session in Commutative Algebra, Joint Mathematics Meetings, Atlanta, GA

Seminars Organized and Co-organized in Mathematics

- 2007–2008 Homological Algebra Seminar, North Dakota State University
- 2006–2007 Undergraduate Colloquium, Kent State University
- 2006–2007 Homological Algebra Seminar, Kent State University
- 2004 Research Experience for Graduate Students, University of Illinois at Urbana-Champaign
- 2004 Research Among Peers, University of Illinois at Urbana-Champaign
- 2001–2002 Math 500, University of Illinois at Urbana-Champaign
- 2000–2004 Commutative Ring Theory Seminar, University of Illinois at Urbana-Champaign
- 2000–2002 Research Among Peers, University of Illinois at Urbana-Champaign
- 1999–2000 Graduate Colloquium, University of Utah
- 1998–2000 Commutative Algebra Seminar, University of Utah

Refereeing and Reviewing

- Archiv der Mathematik, referee
- Bulletin of the Iranian Mathematical Society, referee
- Canadian Journal of Mathematics, referee
- Central European Journal of Mathematics
- Communications in Algebra, referee
- Illinois Journal of Mathematics, referee
- Indian Journal of Pure and Applied Mathematics, referee

Italian Journal of Pure and Applied Mathematics, referee
 Journal of Algebra, referee
 Mathematical Reviews, reviewer
 Mathematische Zeitschrift, referee
 Michigan Mathematical Journal, referee
 National Science Foundation, proposal reviewer
 National Security Agency, proposal reviewer
 Proceedings of the American Mathematical Society, referee
 Rocky Mountain Journal of Mathematics, referee
 Springer Verlag, book proposal reviewer

Editing

Journal of Commutative Algebra, guest editor.

Other University Service

2008–2011 University Senate, North Dakota State University, senator
 2008–2009 University Equal Opportunity Hearing Panel, North Dakota State University, member
 2005–2006 Enrollment Management Policy Council—Outreach and Recruitment Task Force, California State University, Dominguez Hills, member
 1996–1999 Campus-Wide New TA Orientation, University of Utah Center for Teaching and Learning Excellence, panelist and facilitator

Other College Service

2005 College of Natural and Behavioral Science Ad Hoc Committee on Enrollment, California State University, Dominguez Hills, co-chair
 1998 Retention-Promotion-Tenure Committee, University of Utah College of Science

Other Department Service

ongoing North Dakota State University, Mathematics Department, webmaster, since 2008
 ongoing Colloquium Director, North Dakota State University, Mathematics Department, since 2007
 ongoing Algebra, Discrete Mathematics and Number Theory Research Group, North Dakota State University Mathematics Department, webmaster, since 2008
 2008–2010 Assessment Committee, North Dakota State University Mathematics Department, member
 2008–2010 Algebra preliminary examination committee, North Dakota State University Mathematics Department, chair (08–09), member (09–10)
 2007–2008 Hiring Committee, North Dakota State University Mathematics Department, member
 2006 Putnam Exam preparation workshop, Kent State University, Mathematical Sciences Department, co-organizer
 2005–2006 Department of Mathematics Outreach Liaison, California State University, Dominguez Hills: Black College Expo; Day With Dominguez at Long Beach, Compton, Los Angeles Southwest, and El Camino Community Colleges

- 2005–2006 Department of Mathematics Committees: Enrollment Management, Outreach, and Recruitment of Students; Library and Support for Faculty Research; By-laws. California State University, Dominguez Hills, member
- 2003 New TA Orientation, University of Illinois at Urbana-Champaign Mathematics, presenter
- 2002–2003 Graduate Seminar in Commutative Algebra and Algebraic Geometry, University of Illinois at Urbana-Champaign Mathematics, faculty advisor
- 2002 Graduate Student Job Application Panel, University of Illinois at Urbana-Champaign Mathematics, panelist
- 1998, 1999 New TA Orientation, University of Utah Mathematics, facilitator
- 1996–2000 Graduate Student Advisory Committee, University of Utah Mathematics

Other Community Service

- ongoing commalg.org, co-founder and co-webmaster, since 2001
- 2008 North Dakota Southeast Regional Science and Engineering Fair, judge
- 2004 Association for Women in Mathematics Essay Contest on Biographies of Contemporary Women in Mathematics, judge
- 2004 15th Annual Math Day, University of Nebraska-Lincoln, moderator
- 2002, 2004 Illinois Council of Teachers of Mathematics State Math Contest, judge
- 2002 Organizing Committee, Commutative Algebra Section of arxiv.org

Memberships

- American Mathematical Society
 Association for Women in Mathematics
 Phi Kappa Phi National Honor Society

PhD Dissertation Directed

- 2007 Diana White, University of Nebraska-Lincoln
 Dissertation: *Proper Resolutions and their Applications*

Current PhD Student

- Bethany Kubik, North Dakota State University

Other Graduate Student Mentoring

- 2008 Algebra Qualifying Examination Study Group
- 2008 Preliminary Examination Committee, Diana Kennedy
- 2007–2008 Graduate reading course, Benjamin Anderson and Bethany Kubik
- 2002 Preliminary Examination Committee, Jinjia Li
- 2002 Dissertation Committees, Andrew Richardson and Sandra Spiroff
- 2001–2003 Graduate reading courses, Diana White and Valerie Peterson

Undergraduate Student Mentoring

- 2006 Research project, David Rodarte, California State University, Dominguez Hills

Courses taught at North Dakota State University

Multivariate Calculus, Math 259
 Calculus III, MATH 265
 Algebra I, MATH 720
 Algebra II, MATH 721
 Topics in Commutative Algebra: Algebraic Geometry, Math 724

Courses taught at Kent State University

Calculus II, MATH 12003
 Linear Algebra, MATH 21001
 Introduction to Mathematical Thinking and Proofs, MATH 49995

Courses taught at California State University, Dominguez Hills

Calculus II, MAT 193
 Abstract Algebra, MAT 333

Courses taught at University of Nebraska

Modern Algebra, Math 310H, honors section
 Differential Equations, Math 221

Courses taught at University of Illinois

Calculus of Several Variables (Calculus III), Math 242, honors section
 Linear Transformations and Matrices (linear algebra), Math 315
 Commutative Algebra (graduate course), Math 403
 Advanced Topics in Abstract Algebra (graduate courses: “Intersection Multiplicities” and “Intersection Theorems”), Math 416

Courses taught at University of Utah

Intermediate Algebra, Math 101/1010
 Quantitative Thinking, (university Quantitative reasoning requirement), Math 103/1030
 College Algebra, Math 105/1050
 Quantitative Analysis (business calculus), Math 129/1100
 Introduction to University Mathematics (math for poets), Lib. Ed. 150
 Calculus I, Math 111/1210
 Calculus II, Math 112/1220
 “Intensive Calculus” (summer Calculus I–III), TA under Gerald Davey

Course taught at San Francisco State University

Algebra I, Math 60

Web resources

Homepage: <http://math.ndsu.nodak.edu/faculty/ssatherw/>
 Teaching: <http://math.ndsu.nodak.edu/faculty/ssatherw/teach.html>
 Teaching evaluation: <http://math.ndsu.nodak.edu/faculty/ssatherw/ssw-eval.html>
 Research/eprints: <http://math.ndsu.nodak.edu/faculty/ssatherw/research.html>
 Lecture notes/slides: <http://math.ndsu.nodak.edu/faculty/ssatherw/notes.html>
 commalg.org: <http://www.commalg.org>

Professional Development at North Dakota State University

2007–2008 Teaching Seminar, College of Science and Mathematics
2007 New Faculty Mentoring Program

Professional Development at California State University, Dominguez Hills

2005–2006 Mentoring for Faculty Success Program, Center for Teaching and Learning
2005 New Faculty Success Program, Center for Teaching and Learning
2005 Discovery-Based Learning Seminar, Department of Mathematics

Professional Development at University of Utah

1995 TA orientation, Department of Mathematics
1995 TA orientation, Center for Teaching and Learning Excellence

References

By request