
Curriculum Vitae
Susan M. Cooper

Office Mailing Address:

Department of Mathematics
Room 338, Avery Hall
University of Nebraska-Lincoln
Lincoln, Nebraska, USA, 68588

Office Phone Number:

(402) 472-7253

Email:

scooper4@math.unl.edu

Citizenship & Resident Status:

Canadian & Permanent Resident of U.S.A.

Web Page:

www.math.unl.edu/~scooper4/

Research Interests:

Algebraic Geometry & Commutative Algebra

Education:

- 2000 - 2005:
Ph.D. in Mathematics, Queen's University, Kingston, ON, Canada
Dissertation: *Hilbert Functions of Subsets of Complete Intersections*
Supervisors: Dr. Anthony V. Geramita and Dr. Leslie G. Roberts
- 1999 - 2000:
M.Sc. in Mathematics, Queen's University, Kingston, ON, Canada
Thesis: *Subsets of Complete Intersections in \mathbb{P}^2 : Their Hilbert Functions & 2-Type Vectors*
Supervisors: Dr. Anthony V. Geramita and Dr. Leslie G. Roberts
- 1994 - 1998:
B.Sc. in Mathematics (High Honours), University of Regina, Regina, SK, Canada

Academic Appointments:

- August 2008 - Present:
Marilyn M. Hitz Research Assistant Professor, University of Nebraska-Lincoln
- September 2006 - Present (currently on leave):
Assistant Professor, California Polytechnic State University
- August 2005 - May 2006:
Post-Doctoral Fellow, Syracuse University
- 2001 - 2005:
Teaching Fellow - Course Instructor, Queen's University
- 1995 - 2001:
Teaching Assistant, University of Regina (1995 - 1998) and Queen's University (1999 - 2001)
- May 1998 - September 1998:
Student Researcher, University of Regina. Worked on first draft of *Algebras of Linear Transformations*, Springer-Verlag, New York, 2001. Supervisor: Dr. Doug Farenick
- May 1997 - September 1997:
Student Researcher, University of Regina. Research Topic: Ranking the participants of round-robin tournaments. Supervisor: Dr. Denis Hanson

Selected Scholarships & Grants:

- 2007 (California Polytechnic State University):
Hilbert Functions of Special Fat Points, AWM - NSF Mentoring Travel Grant (visited B. Harbourne at the University of Nebraska-Lincoln)
Combinatorial, Geometric and Algebraic Aspects of Hilbert Functions, Edinburgh Mathematical Society (visited L. O'Carroll at the University of Edinburgh, Scotland)
Combinatorial, Geometric and Algebraic Aspects of Hilbert Functions, Glasgow Mathematical Journal (visited L. O'Carroll at the University of Edinburgh, Scotland)
Geometric Consequences of the Eisenbud-Green-Harris Conjecture, State Faculty Support Grant (received a 4 unit course reduction to be used for research)
- 1999 - 2004 (Queen's University):
Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarships PGS-A & B
Ontario Graduate Scholarship
Dean's Travel Grant for Doctoral Field Research (visited University of Genova, Italy)
Thesis Completion Bursary
R. S. McLaughlin Fellowship
- 1994 - 1998 (University of Regina):
James B. Carefoot Memorial Scholarship
Faculty of Graduate Studies & Research Summer Undergraduate Research Scholarship

Teaching Awards:

- *Golden Apple Teaching Award*. For teaching the course APSC 174 - Introduction to Linear Algebra for Engineering Students, Queen's University, 2005.
- *First Year Applied Science Teaching and Learning Award*. For teaching the course APSC 174 - Introduction to Linear Algebra for Engineering Students, Queen's University, 2005.

Publications:

- Cooper, Susan M. and Roberts, L. G. *Algebraic Interpretation of a Theorem of Clements and Lindström*. The Journal of Commutative Algebra, (2008), to appear.
- Cooper, Susan M. and Diaz, Steven P. *The Gale Transform and Multi-Graded Determinantal Schemes*. The Journal of Algebra, v. 319, issue 8 (2007), pp. 3120 - 3127.
- Cooper, Susan M. *Growth Conditions for a Family of Ideals Containing Regular Sequences*. Journal of Pure and Applied Algebra, v. 212, no. 1 (2007), pp. 122 - 131.
- Cooper, Susan M. and Roberts, L. G. *Notes on Integral Closure*. The Curves Seminar at Queen's, Queen's Papers in Pure and Applied Mathematics, v. 13, no. 119 (2000), pp. 63 - 101.

Submitted Papers:

- Cooper, Susan M. *The Eisenbud-Green-Harris Conjecture for Ideals of Points*. Submitted to The Journal of Commutative Algebra (2008).

Papers and Research in Progress:

- *Bounding Hilbert Functions of Fat Points in the Plane Via Matroids and Residuation* (joint with B. Harbourne, University of Nebraska-Lincoln and Z. Teitler, Texas A & M University).
- *Geometric Consequences of the Lex-Plus-Powers Conjecture*.
- Generalizations of the Gale Transformation (joint with S. Diaz, Syracuse University).

Invited Talks:

- “Bézout Vectors & Fat Points”. Seminar presentation, University of Texas - Arlington, Oct. 2008.
- “What is a Hilbert Function?” AGANT seminar presentation, University of N. Texas, Oct. 2008.
- “Generalizations & Consequences of Macaulay’s Theorem”. Colloquium, University of Nebraska-Lincoln, Oct. 2008.
- “Bounding Hilbert Functions of Fat Points”. KUMUNU ’08, University of Nebraska-Lincoln, Sept. 2008.
- “The Gale Transform & Multi-Graded Determinantal Schemes”. Special Session on Algebraic Geometry of Matrices & Determinants, AMS Meeting Sectional, Louisiana State University, March 2008.
- “Characterizing Hilbert Functions of Fat Points”. Special Session on Progress in Commutative Algebra, National Joint Meeting of the AMS and the MAA, Jan. 2008.
- “The Eisenbud-Green-Harris Conjecture and Projective Space”. Seminar presentation, Tulane University, Nov. 2007.
- “Line Count Configurations and Fat Points”. Special Session on Free Resolutions, AMS Sectional Meeting, DePaul University, Oct. 2007.
- “The Lex-Plus-Powers Conjecture for Points”. Summer school on Monomial Resolutions and Hilbert Functions, Cornell University, May 2006.
- “The Lex-Plus-Powers Conjecture for Points”. Special Session on Hilbert Functions & Resolutions, AMS Sectional Meeting, San Francisco State University, April 2006.
- “The Lex-Plus-Powers Conjecture for Points”. Seminar presentation, Cornell University, April 2006.
- “Hilbert Functions of Subsets of Complete Intersections”. Special Session on Monomials and Resolutions, AMS Sectional Meeting, Florida International University, April 2006.
- “Hilbert Functions of Subsets of Complete Intersections”. Special Session on Resolutions, AMS Sectional Meeting, University of Oregon, Nov. 2005.
- “Hilbert Functions of Subsets of Complete Intersections in \mathbb{P}^n ”. Special Session on Commutative Algebra, National Joint Meeting of the AMS and the MAA, Jan. 2005.
- “Hilbert Functions of Subsets of Complete Intersections in \mathbb{P}^n ”. Special Session on Commutative Algebra, Winter Meeting of the Canadian Mathematical Society, McGill University, Dec. 2004.
- “Hilbert Functions of Subsets of Complete Intersections in \mathbb{P}^n ”. Special Session on Syzygies and Hilbert Functions, AMS Sectional Meeting, Florida State University, March 2004.

Selected Presentations:

- “Hilbert Functions of Fat Points”. Colloquium, California Polytechnic State University, Nov. 2007.
- “Counting Macaulay-Style”. 32nd Annual New York State Regional Graduate Mathematics Conference, Syracuse University, April 2006.
- “Hilbert Functions of Subsets of Complete Intersections in \mathbb{P}^n ”. Workshop on Resolutions, Cornell University, Oct. 2004.
- “Hilbert Functions of Subsets of Complete Intersections in Projective n -Space”. Connecting Women in Math Across Canada Conference, University of Alberta, June 2003.
- “Hilbert Functions of Subsets of Complete Intersections in \mathbb{P}^2 ”. Route 81 Conference on Commutative Algebra and Algebraic Geometry, Queen’s University, Oct. 2002.
- “Subsets of Complete Intersections in \mathbb{P}^2 : Their Hilbert Functions and Associated 2-Type Vectors”. Conference on 0-Dimensional Schemes and Related Topics (in honour of A. Geramita), Sicily, Italy, June 2002 (poster presentation).
- “Subsets of Complete Intersections in \mathbb{P}^2 : Their Hilbert Functions and Associated 2-Type Vectors”. CoCoA Summer School and Conference, Queen’s University, July 2001 (poster presentation).
- “Ranking the Participants in a Round-Robin Tournament”. Canadian Undergraduate Mathematics Conference, University of British Columbia, July 1998.

Additional Conferences and Schools Attended:

- KUMUNU '07, University of Nebraska-Lincoln, Lincoln, Sept. 2007.
- Advances in Algebra and Geometry (in honor of D. Eisenbud), Mathematical Sciences Research Institute (MSRI), April 2007.
- Workshop on Syzygies and Hilbert Functions, Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Oct. 2006. *Invited participant.*
- Summer course in Syzygies, Hilbert Functions and Generic Initial Ideals, Cortona, Italy, July 2006. *Fellowship awarded by Scuola Matematica Interuniversitaria.*
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Queen's University, Oct. 2005.
- AMS Sectional Meeting, Bard College, Oct. 2005.
- CoCoA School on Computer Computations in Commutative Algebra, Porto Conte, Italy, May 2005.
- 2nd Workshop on Resolutions, Inverse Systems & Coinvariants, University of Ottawa, Jan. 2005.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Cornell University, Oct. 2004.
- Inverse Systems Meet Diagonal Coinvariants, workshop held at Queen's University, Jan. 2004.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Syracuse University, Oct. 2003.
- Introductory Workshop in Commutative Algebra, MSRI, Sept. 2002. *Invited participant.*
- Joint Meeting between the AMS and the Unione Matematica Italiana, Pisa, Italy, June 2002.
- Current Trends in Commutative Algebra, Levico, Italy, June 2002.
- AMS Sectional Meeting, University of Michigan, March 2002.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, SUNY - Albany, Oct. 2001.
- CMS Summer Meeting, McMaster University, June 2000.
- CMS Winter Meeting, Université de Montréal, Montréal, Dec. 1999.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Syracuse University, Oct. 1999.

Conferences and Special Sessions Co-organized:

- Special Session on Hilbert Functions and Free Resolutions, AMS Sectional Meeting, University of British Columbia, Oct. 2008.
- Connecting Women in Math Across Canada Conference, University of Alberta, June 2003.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Queen's University, Fall 2002.

Seminars Co-organized:

- Algebra Seminar, California Polytechnic State University, Sept. 2006 - June 2008.
- Graduate Student Seminar, Queen's University, Sept. 2000 - April 2003.

Referee/Reviewer For:

- American Mathematical Monthly
- Chapman & Hall/CRC, book proposal reviewer

Instructional Training and Certificates:

- Writing Generally in Every Discipline Workshop, California Polytechnic State University, 2006.
- SGS 901 - Teaching and Learning in Higher Education. Course offered by the Instructional Development Centre (IDC), Queen's University, 2003.
- Program in University Teaching and Learning: Certificates I (Scholarship); II (Practical Experience); III (Professional Development). IDC, Queen's University, May 2003.

Curriculum Development Activities:

- Co-author of linear algebra (APSC 174) course notes, Queen's University, 2003 - 2005.

Courses Instructed:

- University of Nebraska-Lincoln:
Matrix Theory - Math 314/814, Fall 2008
- California Polytechnic State University:
Calculus I - Math 141, Fall 2006 and Fall 2007
Calculus II - Math 142, Fall 2006, Winter 2007, and Winter 2008
Calculus III - Math 143, Spring 2007
Linear Algebra I - Math 206, Spring 2007
Linear Algebra II - Math 306, Fall 2007
Linear Algebra III - Math 406, Winter 2008
Methods of Proof in Mathematics - Math 248, Spring 2008
- Syracuse University:
Calculus I - MAT 295, Fall 2005 and Spring 2006
First Course in Linear Algebra - MAT 331, Spring 2006
- Queen's University:
Introduction to Linear Algebra for Engineering Students - APSC 174, Winters 2003, 2004, and 2005
Differential and Integral Calculus for Life Science Students - Math 121, Fall 2001 and Winter 2005

Teaching Assistant Experience:

- Various calculus and linear algebra courses, Queen's University & University of Regina, 1995 - 2001.

Instructional Leadership Activities:

- Organizer of Teacher Session for the Sonia Kovalevsky Festival, Syracuse University, Oct. 2005.
- TA Mentor/Liaison, Queen's University, Sept. 2004 - April 2005.
- Organizer of Marking Session, Teaching Assistant Workshop, Queen's University, Sept. 2004.
- Co-organizer of the Teaching Assistant Workshop, Queen's University, Sept. 2001 and 2002.
- Co-organizer of day math camps for elementary-school students, Queen's University, June 2000 and 2001.

Additional Service Activities:

- Algebra Graduate Examination Committee Member, California Polytechnic State University, Sept. 2006 - June 2008.
- Active participant (non-member) of Curriculum Committee meetings, California Polytechnic State University, Sept. 2006 - Sept. 2007.
- Academic advisor of undergraduate mathematics majors, California Polytechnic State University, Sept. 2007 - present.
- Panel discussion member: "Getting a Job in Academia", 32nd Annual New York State Regional Graduate Mathematics Conference, Syracuse University, April 2006.
- CMS Student Committee Co-Chair, July 1, 2002 - June 30, 2004.
- CMS Board Member (Student Representative), Jan. 2000 - June 30, 2004.
- CMS Student Committee Member, 1998 - 2004.
- Member of the Math Headship Committee, Queen's University, Fall 2003.
- CMS Judge, Canada-Wide Science Fair, Queen's University, May 2001.
- Student Representative, Department of Mathematics & Statistics, University of Regina, 1997 - 1998.

Professional Memberships:

- American Mathematical Society (AMS), Canadian Mathematical Society (CMS), Mathematical Association of America (MAA), Association for Women in Mathematics (AWM)