

**Curriculum Vitae**  
**Dr. Susan Marie Cooper**

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**Citizenship:**

Canadian

**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.  
*Instructed:* Calculus I - III; Linear Algebra I - III; Introduction to Mathematical Proofs.
- August 2005 - May 2006:  
Post-Doctoral Fellow, Syracuse University.  
*Instructed:* Calculus I; First Course in Linear Algebra.
- 2001 - 2005:  
Teaching Fellow - Course Instructor, Queen's University.  
*Instructed:* Linear Algebra for Engineering Students; Differential and Integral Calculus.
- 1995 - 2001:  
Teaching Assistant, University of Regina (1995 - 1998) and Queen's University (1999 - 2001).  
*Courses:* Various calculus and linear algebra courses.
- May 1998 - September 1998:  
Student Researcher, University of Regina. Worked on first draft of *Algebras of Linear Transformations*, Springer. 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, Awards & Grants:**

- 2007 (California Polytechnic State University):  
*Hilbert Functions of Special Fat Points*, Association for Women in Mathematics (AWM) - National Science Foundation (NSF) Mentoring Travel Grant (visited B. Harbourne at the University of Nebraska - Lincoln, USA).  
*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).
- 2004 (Queen's University):  
Thesis Completion Bursary.  
R. S. McLaughlin Fellowship.
- 1991 - 2003 (Queen's University):  
Natural Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Scholarship PGS-A & PGS-B.  
Ontario Graduate Scholarship.  
Queen's University Graduate Awards.  
Dean's Travel Grant for Doctoral Field Research. (Visited University of Genova, Italy.)
- 1994 - 1998 (University of Regina):  
James B. Carefoot Memorial Scholarship.  
Faculty of Graduate Studies & Research Summer Undergraduate Research Scholarship.  
Dean's Honours List, Faculty of Science and Faculty of Fine Arts.  
General Proficiency Awards.  
Austrian Ambassador's Book Prize, Germanic Studies Award.

**Publications:**

- Cooper, Susan M. and Roberts, L. G. 2008. Algebraic Interpretation of a Theorem of Clements and Lindström. *The Journal of Commutative Algebra* (to appear).
- Cooper, Susan M. and Diaz, Steven P. 2007. The Gale Transform and Multi-Graded Determinantal Schemes. *The Journal of Algebra*, v. 319, issue 8, pp. 3120 - 3127.
- Cooper, Susan M. 2007. Growth Conditions for a Family of Ideals Containing Regular Sequences. *Journal of Pure and Applied Algebra*, v. 212, no. 1, pp. 122 - 131.
- Cooper, Susan M. and Roberts, L. G. 1999. Notes on Integral Closure. *The Curves Seminar at Queen's, Queen's Papers in Pure and Applied Mathematics*, v. 13.

**Submitted Papers:**

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

**Papers and Research in Progress:**

- *Hilbert Functions of Fat Points in the Plane Via 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).
- Castelnuovo-Mumford Regularity (joint with L. O'Carroll, University of Edinburgh).

**Invited Talks:**

- The Gale Transform and Multi-Graded Determinantal Schemes. Special Session on Algebraic Geometry of Matrices and Determinants, AMS Sectional Meeting, Louisiana State University, Baton Rouge, LA, USA, March 2008.
- Characterizing Hilbert Functions of Fat Points. Special Session on Progress in Commutative Algebra, National Joint Meeting of the AMS and the MAA, San Diego, CA, USA, Jan. 2008.
- The Eisenbud-Green-Harris Conjecture and Projective Space. Seminar presentation, Tulane University, New Orleans, LA, USA, November 2007.
- Line Count Configurations and Fat Points. Special Session on Free Resolutions, AMS Sectional Meeting, DePaul University, Chicago, IL, USA, October 2007.
- The Lex-Plus-Powers Conjecture for Points. Summer school on Monomial Resolutions and Hilbert Functions, Cornell University, Ithaca, NY, USA, May 2006.
- The Lex-Plus-Powers Conjecture for Points. Special Session on Hilbert Functions & Resolutions, AMS Sectional Meeting, San Francisco State University, San Francisco, CA, USA, April 2006.
- The Lex-Plus-Powers Conjecture for Points. Seminar presentation, Cornell University, Ithaca, NY, USA, April 2006.
- Hilbert Functions of Subsets of Complete Intersections. Special Session on Monomials and Resolutions, AMS Sectional Meeting, Florida Intl. University, Miami, FL, USA, April 2006.
- Hilbert Functions of Subsets of Complete Intersections. Special Session on Resolutions, AMS Sectional Meeting, University of Oregon, Eugene, OR, USA, November 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, Atlanta, GA, USA, January 2005.
- Hilbert Functions of Subsets of Complete Intersections in  $\mathbb{P}^n$ . Special Session on Commutative Algebra, Winter Meeting of the Canadian Mathematical Society (CMS), McGill University, Montréal, QC, Canada, December 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, Tallahassee, FL, USA, March 2004.

**Selected Presentations:**

- Hilbert Functions of Fat Points. Colloquium, Cal Poly, San Luis Obispo, CA, USA, Nov. 2007.
- Counting Macaulay-Style. Talk at the 32nd Annual New York State Regional Graduate Mathematics Conference, Syracuse University, Syracuse, NY, USA, April 2006.
- Hilbert Functions of Subsets of Complete Intersections in  $\mathbb{P}^n$ . Talk at the Workshop on Resolutions, Cornell University, Ithaca, NY, USA, October 2004.
- Hilbert Functions of Subsets of Complete Intersections in Projective  $n$ -Space. Talk at Connecting Women in Math Across Canada, University of Alberta, Edmonton, AB, Canada, June 2003.
- Hilbert Functions of Subsets of Complete Intersections in  $\mathbb{P}^2$ . Talk at the Route 81 Conference on Commutative Algebra and Algebraic Geometry, Queen's University, Kingston, ON, Canada, October 2002.
- Subsets of Complete Intersections in  $\mathbb{P}^2$ : Their Hilbert Functions and Associated 2-Type Vectors. Poster presentation at the Conference on Zero-Dimensional Schemes and Related Topics (in honour of A. V. Geramita), Sicily, Italy, June 2002.
- Subsets of Complete Intersections in  $\mathbb{P}^2$ : Their Hilbert Functions and Associated 2-Type Vectors. Poster presentation at CoCoA Summer School and Conference, Queen's University, Kingston, ON, Canada, July 2001.
- Ranking the Participants in a Round-Robin Tournament. Talk at the Canadian Undergraduate Mathematics Conference, University of British Columbia, Vancouver, BC, Canada, July 1998.

**Additional Conferences and Schools Attended:**

- National Joint Meeting of the AMS and the MAA, San Diego, CA, USA, January 2008.
- KUMUNU 2007, University of Nebraska - Lincoln, Lincoln, NE, USA, September 2007.
- Advances in Algebra and Geometry (in honor of D. Eisenbud), Mathematical Sciences Research Institute (MSRI), Berkeley, CA, USA, April 2007.
- Workshop on Syzygies and Hilbert Functions, Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Banff, Alberta, Canada, October 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, Kingston, ON, Canada, October 2005.
- AMS Sectional Meeting, Bard College, Annandale-on-Hudson, NY, USA, October 2005.
- CoCoA Summer School on Computer Computations in Commutative Algebra, Porto Conte, Italy, May 2005.
- 2nd Workshop on Resolutions, Inverse Systems, and Coinvariants, University of Ottawa, Ottawa, ON, Canada, January 2005.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Cornell University, Ithaca, NY, USA, October 2004.
- Inverse Systems Meet Diagonal Coinvariants, workshop held at Queen's University, Kingston, ON, Canada, January 2004.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Syracuse University, Syracuse, NY, USA, October 2003.
- Introductory Workshop in Commutative Algebra, MSRI, Berkeley, CA, USA, September 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, Ann Arbor, MI, USA, March 2002.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, SUNY - Albany, NY, USA, October 2001.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Cornell University, Ithaca, NY, USA, October 2000.
- CMS Summer Meeting, McMaster University, Hamilton, ON, Canada, June 2000.
- CMS Winter Meeting, Université de Montréal, Montréal, QC, Canada, December 1999.
- Route 81 Conference on Commutative Algebra and Algebraic Geometry, Syracuse University, Syracuse, NY, USA, October 1999.

**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.

**Teaching Awards:**

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

**Administrative and Leadership Activities:**

- Co-organizer of Special Session on Hilbert Functions and Free Resolutions, AMS Sectional Meeting, University of British Columbia, Vancouver, BC, Canada, October 2008.
- Algebra Graduate Examination Committee Member, California Polytechnic State University, September 2006 - present.
- Active participant (non-member) of Curriculum Committee Meetings, California Polytechnic State University, September 2006 - present.
- Co-organizer of Algebra Seminar, California Polytechnic State University, 2006 - present.
- Academic advisor of undergraduate mathematics majors, California Polytechnic State University, September 2007 - present.
- Panel discussion member: "Getting a Job in Academia", 32nd Annual New York State Regional Graduate Mathematics Conference, Syracuse University, April 2006.
- Organizer of Teacher Session for the Sonia Kovalevsky Festival, Syracuse University, October 2005.
- TA Mentor/Liaison, Queen's University, September 2004 - April 2005.
- Organizer of Marking Session, Teaching Assistant Workshop, Queen's University, September 2004.
- CMS Student Committee Co-Chair (with Robert Juricevic), July 1, 2002 - June 30, 2004.
- CMS Board Member, Student Representative, January 2000 - June 30, 2004.
- CMS Student Committee Member, 1998 - 2004.
- Member of the Math Headship Committee, Queen's University, Fall 2003.
- Member of the organizing committee for the Connecting Women in Math Across Canada conference, University of Alberta, Edmonton, AB, Canada, June 2003.
- Co-organizer (with Chris Leith) of the Graduate Student Seminar, Queen's University, September 2000 - April 2003.
- Co-organizer (with Dr. Anthony Geramita) of the Route 81 Conference on Commutative Algebra and Algebraic Geometry, Queen's University, Kingston, ON, Canada, 2002.
- Co-organizer (with Chris Leith and Dr. Morris Orzech) of the Teaching Assistant Workshop, Queen's University, September 2001 and 2002.
- CMS Judge, Canada-Wide Science Fair, Queen's University, May 2001.
- Co-organizer (with Dr. Leo Jonker) of two day-long math camps for elementary-school students, Queen's University, June 2000 and 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).

**Non-Academic Hobbies and Interests:**

- Yoga, aerobics, camping, hiking, reading, dancing, theatre, cats.