Susan M. Cooper

Mailing Address:
Department of Mathematics
NDSU Dept 2750, PO Box 6050
Fargo, ND 58108-6050, USA

Office Phone Number: (701) 231-8174
Email: susan.marie.cooper@ndsu.edu

Canadian Citizen & Permanent Resident of U.S.A.

Research Interests

Commutative Algebra and Algebraic Geometry.

Education

Ph.D. in Mathematics, Queen's University, 2005
Dissertation: Hilbert Functions of Subsets of Complete Intersections
Advisors: A. V. Geramita & L. G. Roberts

M. Sc. in Mathematics, Queen's University, 2000
Thesis: Subsets of Complete Intersections in $\mathbb{P}^2$: Their Hilbert Functions & 2-Type Vectors
Advisors: A. V. Geramita & L. G. Roberts

B.Sc. Honours in Mathematics (graduated with High Honours), University of Regina, 1999

Academic Positions

Assistant Professor	North Dakota State Univ.	Aug. 2014–present
Assistant Professor	Central Michigan Univ.	July 2011–Aug. 2014
Marilyn Hitz Research Asst. Prof.	Univ. of Nebraska–Lincoln	Aug. 2008–July 2011
Assistant Professor	California Polytechnic	Aug. 2006–June 2011
Post-Doctoral Fellow	Syracuse Univ.	Aug. 2005–May 2006

Publications and Preprints

Fat Points, Partial Intersections, and Hamming Distance (with E. Guardo), in preparation (expected submission January 2017).

Symbolic Powers of Codimension Two Cohen-Macaulay Ideals (with G. Fatabbi, E. Guardo, A. Lorenzini, J. Migliore, U. Nagel, A. Seceleanu, J. Szpond, A. Van Tuyl), submitted (`https://arxiv.org/abs/1606.00935`).

Symbolic Powers of Monomial Ideals (with R. Embree, T. Hà, A. Hoefel), Proceedings of the Edinburgh Mathematical Society, v. 60, issue 1 (2017), pp. 39–55.

The Waldschmidt Constant for Squarefree Monomial Ideals (with C. Bocci, E. Guardo, B. Harbourne, M. Janssen, U. Nagel, A. Seceleanu, A. Van Tuyl, T. Vu), Journal of Algebraic Combinatorics, v. 44, number 4 (2016), pp. 875–904.

Regina Lectures on Fat Points (with B. Harbourne), "Connections Between Algebra, Combinatorics, and Geometry" (S. Cooper, S. Sather-Wagstaff, ed.), Springer Proceedings in Mathematics and Statistics, 76 (2014), pp. 147–187.

The Alpha Problem and Line Count Configurations (with S. Hartke), Journal of Algebra, v. 407 (2014), pp. 224–245.

Containment Results for Ideals of Various Configurations of Points in $\mathbb{P}^N$ (with C. Bocci and B. Harbourne), Journal of Pure and Applied Algebra, v. 218, issue 1 (2014), pp. 65–75.

Multiplicities & Enumeration of Semidualizing Modules (with S. Sather-Wagstaff), Communications in Algebra, v. 41, issue 12 (2013), pp. 4549–4558.

Subsets of Complete Intersections and the EGH Conjecture, "Progress in Commutative Algebra I: Combinatorics and Homology" (C. Francisco, L. Klingler, S. Sather-Wagstaff, J. Vassilev, ed.), De Gruyter, v. 1 (2012), pp. 167–198.

Recent Developments & Open Problems in Linear Series (with Th. Bauer, C. Bocci, S. Di Rocco, M. Dumnicki, B. Harbourne, K. Jabbusch, A. Knutsen, A. Küronya, R. Miranda, J. Roé, H. Schenck, T. Szemberg, Z. Teitler), "Contributions to Algebraic Geometry, IMPANGA Lecture Notes" (P. Pragacz, ed.), European Math. Soc. Series of Congress Reports, (2012), pp. 93–140.

Combinatorial Bounds on Hilbert Functions of Fat Points in Projective Space (with B. Harbourne and Z. Teitler), Journal of Pure and Applied Algebra, v. 215, issue 9 (2011), pp. 2165–2179.

Algebraic Interpretation of a Theorem of Clements and Lindström (with L. Roberts), Journal of Commutative Algebra, v. 1, no. 3 (2009), pp. 361–380.

The Gale Transform and Multi-Graded Determinantal Schemes (with S. Diaz), Journal of Algebra, v. 319, issue 8 (2007), pp. 3120–3127.

Growth Conditions for a Family of Ideals Containing Regular Sequences, Journal of Pure and Applied Algebra, v. 212, issue 1 (2007), pp. 122–131.

Notes on Integral Closure (with L. Roberts), The Curves Seminar at Queen's, Queen's Papers in Pure and Applied Mathematics, v. 13, no. 119 (2000), pp. 63–101.

Grants and Fellowships

Advance FORWARD Course Release Program sponsored by the National Science Foundation (NSF) Award HRD-0811239, North Dakota State University, Spring 2016 (received a 3-credit course release).

Algebraic and Combinatoric Invariants of Fat Points, **Early Career Grant**, $42,452, Office of Research and Sponsored Programs, Central Michigan University, 2012–2015 (held until 2014).

Fat Points and Coding Theory, **NSF Research Experiences for Undergraduates (REU)**, Senior Personnel, Central Michigan University, Summer 2013.

Symbolic Powers of Monomial Ideals, **FRCE Premier Display Grant**, $1,000, Central Michigan University, Spring 2013.

Connections Between Algebra and Geometry, **NSF Conference Award**, $15,340 (DMS–1200313), Feb. 2012–April 2013.

Connections Between Algebra and Geometry, **National Security Agency (NSA) Conference Award**, $15,000 (ID:111011), Feb. 2012–April 2013.

Connections Between Algebra and Geometry, **Pacific Institute for the Mathematical Sciences (PIMS) Conference Award**, $5,000 CDN, Summer 2012.

Faculty Center for Innovative Teaching Professional Growth Grant, $573, Central Michigan University, Fall 2012.

Some Containment Results for Fat Points, **FRCE Premier Display Grant**, $1,000, Central Michigan University, Fall 2011.

KUMUNU 2011, **NSF Conference Award**, $17,000 (DMS–1110585).

US Junior Oberwolfach Fellow, $500, supported by the NSF Award DMS–0540019 (attended the mini-workshop Linear Series on Algebraic Varieties, Oct. 2010).

KUMUNU 2009, **NSF Conference Award**, $9,290, (DMS–0940459), co-PI B. Harbourne.

Computing Algebraic Invariants of Fat Points Via Reduction, **Association for Women in Mathematics (AWM)–NSF Travel Grant**, $1,400 (attended Joint Meeting of the American & Korean Mathematical Societies, Seoul, Korea, Dec. 2009).

Hilbert Functions of Special Fat Points, **AWM–NSF Mentoring Travel Grant**, $3,050 (visited B. Harbourne, University of Nebraska–Lincoln, July 2007).

Combinatorial, Geometric and Algebraic Aspects of Hilbert Functions, **Edinburgh Math. Society** & **Glasgow Math. Journal**, £1,870 (visited L. O'Carroll, University of Edinburgh, Aug. 2007).

Geometric Consequences of the Eisenbud-Green-Harris Conjecture, **State Faculty Support Grant**, California Polytechnic State University, Spring 2008 (received a 4-unit course reduction).

Academic and Teaching Awards

Nomination for Outstanding Teaching Award, Central Michigan Univ., 2014.
Confidentially nominated by a colleague or student, College of Science & Technology Award.

Honorable Mention, Outstanding Postdoc Award, Univ. of Nebraska–Lincoln, 2010.
1 award and 5 honorable mentions given campus-wide.

Parents Assn. Award: Recognition for Contributions to Students, U. of Nebraska–Lincoln, 2008.
Award based on recommendations from parents in consultation with their children.

Golden Apple Teaching Award, Engineering Society, Queen's Univ., 2005.
4 awards given annually based on nominations by Engineering students.

1st Year Applied Science Teaching & Learning Award, Queen's Univ., 2005.
2 annual awards given for contributions to creating a good teaching & learning environment.

Plenary Lectures, Colloquia, and Workshops Instructed

Where is Alpha?, Colloquium, North Dakota State Univ., Oct. 2014.

Monomial Ideals, Symbolic Powers, and a Polyhedron, Interactions Between Commutative Algebra and Algebraic Geometry II, Tulane University, Sept. 2013.

A Macaulay-Characterization for Fat Points?, Michigan Computational Algebraic Geometry Conference, Western Michigan University, May 2013.

The Perplexing Hilbert Functions of Fat Points, Interactions Between Commutative Algebra and Algebraic Geometry (in Honour of Tony Geramita), Queen's University, Oct. 2012.

Fat Points and Symbolic Powers, Problem Session Assistant (Instructor: B. Harbourne, Univ. of Nebraska–Lincoln), Connections Between Algebra & Geometry, U. of Regina, Summer 2012.

Conway's Mathematical Games, Kappa Mu Epsilon Initiation, Central Michigan Univ., April 2012.

Trimming Fat Points, Prairie Network for Research in the Mathematical Sciences (PNRMS) Annual Meeting, University of Regina, May 2011.

A Survey of Macaulay's Theorem, Workshop Lecture, PNRMS Meeting, U. of Regina, May 2011.

Powerful Invariants of Points, Colloquium, University of Mississippi, Nov. 2010.

Generalizations & Consequences of Macaulay's Theorem, Colloquium, University of Nebraska–Lincoln, Oct. 2008.

Hilbert Functions of Fat Points, Colloquium, California Polytechnic State Univ., Nov. 2007.

Selected Invited Presentations

The Symbolic Polyhedron and Waldschmidt Constant, Special Session: Combinatorial and Computational Commutative Algebra, American Mathematical Society (AMS) Sectional Meeting, Univ. of Georgia, March 2016.

The Alpha Invariant and Symbolic Powers of Monomial Ideals, Special Session: Commutative Algebra, AMS Sectional Meeting, Rutgers Univ., Nov. 2015.

Simplifying Fat Points via Partial Intersections, Ideals of Linear Subspaces, Their Symbolic Powers and Waring Problems, Mathematisches Forschungsinstitut Oberwolfach, Feb. 2015.

Fat Points, Grids, and Partial Intersections, Special Session: Commutative Algebra: Interactions with Algebraic Combinatorics, Algebraic Geometry, and Representation Theory, Canadian Mathematical Society (CMS) Winter Meeting, McMaster Univ., Dec. 2014.

Complete and Partial Intersections, Special Session: Interactions Between Commutative Algebra and Algebraic Geometry, AMS Sectional Meeting, Texas Tech University, April 2014.

Containment Problems for Monomial Ideals, Special Session: Combinatorial Commutative Algebra, AMS Sectional Meeting, University of Louisville, Oct. 2013.

Symbolic Powers of Monomial Ideals, Special Session: Commutative Algebra and Combinatorics, CMS Summer Meeting, Dalhousie Univ., June 2013.

Partial Intersections and Fat Points, Special Session: Commutative Algebra, AMS Sectional Meeting, University of Mississippi, March 2013.

Bringing Real-Life Mathematics to a Fifth Grade Classroom (with K. Hall), 2012 Regional Conference, National Council of Teachers of Mathematics (NCTM), Chicago, Nov. 2012.

Fat Points on Grids, Special Session: Combinatorial Commutative Algebra, AMS Sectional Meeting, Tulane University, Oct. 2012.

Bounding the Alpha Invariant for Fat Points, Special Session: Combinatorial Commutative Algebra, AMS Sectional Meeting, University of Kansas, April 2012.

Measuring the Difference Between Symbolic and Regular Powers, Commutative Algebra Seminar, University of Michigan, March 2012.

The Alpha Problems for Fat Points, Algebra Seminar, Tulane University, Jan. 2012.

Some Containment Results for Fat Points, Special Session: Algebraic Geometry & Commutative Algebra, CMS Winter Meeting, Ryerson & York Universities, Dec. 2011.

A Mathematician, A Teacher, and A Fifth Grader - Oh My!, Issues in Math. and Science Education Seminar, University of Nebraska–Lincoln, April 2011.

Relating Initial Degrees of Symbolic and Regular Powers, Special Session: Local Commutative Algebra, Joint Mathematics Meetings, Jan. 2011.

Hilbert Functions and Initial Degrees of Fat Points, Linear Series on Algebraic Varieties, Mathematisches Forschungsinstitut Oberwolfach, Oct. 2010.

Reduced vs Non-Reduced Points–A Score Sheet for Invariants, Algebra Seminar, Syracuse Univ., March 2010.

Invariants Related to Symbolic Powers of Ideals of Points, Algebra Seminar, Univ. of Kansas, Feb. 2010.

Computing Algebraic Invariants of Fat Points Via Reduction, Special Session: The Geometry of Varieties, Syzygies and Computations, Intl. Joint Meeting of the AMS & KMS, Seoul, Korea, Dec. 2009.

Short Exact Sequences Related to Trimming Fat Points Via Lines, ASARC Seminar, Korea Advanced Institute of Science and Technology (KAIST), Dec. 2009.

Tearing Down Fat Point Schemes, Special Session: Graded Resolutions, AMS Sectional Meeting, Florida Atlantic University, Oct. 2009.

In Search of Exactness, Joint Maximals Seminar, University of Edinburgh, March 2009.

Hilbert Functions of Fat Points, Connections for Women: Algebraic Geometry & Related Fields, Mathematical Sciences Research Institute (MSRI), Jan. 2009 (poster).

Bounding Hilbert Functions of Fat Points, Special Session: Commutative Algebra and Algebraic Geometry, CMS Winter Meeting, Carleton University, Dec. 2008.

Investigating Macaulay's Theorem, Algebra Seminar, Texas Tech University, Oct. 2008.

Bézout Vectors & Fat Points, Algebra Seminar, University of Texas–Arlington, Oct. 2008.

What is a Hilbert Function?, AGANT Seminar, University of North Texas, Oct. 2008.

Bounding Hilbert Functions of Fat Points, KUMUNU '08, Univ. of Nebraska–Lincoln, Sept. 2008.

The Gale Transform & Multi-Graded Determinantal Schemes, Special Session: Algebraic Geometry of Matrices & Determinants, AMS Sectional Meeting, Louisiana State Univ., March 2008.

Characterizing Hilbert Functions of Fat Points, Special Session: Progress in Commutative Algebra, Joint Mathematics Meetings, Jan. 2008.

The Eisenbud-Green-Harris Conjecture & Projective Space, Algebra Seminar, Tulane U., Nov. 2007.

Line Count Configurations and Fat Points, Special Session: Free Resolutions, AMS Sectional Meeting, DePaul University, Oct. 2007.

Counting Macaulay-Style, New York State Regional Graduate Mathematics Conference, Syracuse University, April 2006.

The Lex-Plus-Powers Conjecture for Points, Special Session: Hilbert Functions & Resolutions, AMS Sectional Meeting, San Francisco State University, April 2006.

The Lex-Plus-Powers Conjecture for Points, Computational & Commutative Algebra Seminar, Cornell Univ., Apr. 2006.

Hilbert Functions of Subsets of Complete Intersections in $\mathbb{P}^n$, Special Session: Commutative Algebra, Joint Mathematics Meetings, Jan. 2005.

Subsets of Complete Intersections in $\mathbb{P}^2$*: Their Hilbert Functions and Associated 2-Type Vectors*, Conference on 0-Dimensional Schemes and Related Topics, Sicily, Italy, June 2002 (poster).

Invited Conference and Workshop Participation

Ordinary and Symbolic Powers of Ideals, Banff International Research Station for Mathematical Innovation and Discovery (BIRS) and Casa Matemática Oaxaca (CMO), May 2017.

Ideals of Linear Subspaces, Their Symbolic Powers and Waring Problems, Mathematisches Forschungsinstitut Oberwolfach (MFO), Feb. 2015 (participated electronically).

Combinatorial Commutative Algebra and Applications, Mathematical Sciences Research Institute (MSRI), Dec. 2012.

Enacting Standards for Mathematical Practices, Univ. of Nebraska–Lincoln, Oct. 2011.

Linear Series on Algebraic Varieties, MFO, Oct. 2010.

Connections for Women: Algebraic Geometry and Related Fields, MSRI, Jan. 2008.

Syzygies & Hilbert Functions, BIRS, Oct. 2006.

Syzygies, Hilbert Functions & Generic Initial Ideals, Scuola Matematica Interuniversitaria, Cortona, Italy, July 2006.

Introductory Workshop in Commutative Algebra, MSRI, Sept. 2002.

Refereeing and Reviewing

Illinois Journal of Mathematics.

Rocky Mountain Journal of Mathematics.

Journal of Pure and Applied Algebra.

Journal of Commutative Algebra.

Vietnam Journal of Mathematics.

Zentralblatt MATH.

American Mathematical Monthly.

Editing

Connections Between Algebra, Combinatorics, and Geometry, Springer Proceedings in Mathematics and Statistics (PROMS), 76 (2014), co-editor.

Conference and Special Session Organization

Local Organizing Committee Chair: Spring Central Sectional Meeting of the American Mathematical Society (AMS), North Dakota State Univ., Apr. 2016.

Special Session: Commutative Algebra and Its Interactions with Combinatorics and Algebraic Geometry, AMS Sectional Meeting, North Dakota State Univ., Apr. 2016.

Special Session: Commutative Algebra and Its Interactions with Algebraic Geometry, AMS Sectional Meeting, Dalhousie Univ., Oct. 2014.

Conversations Among Colleagues, Making Practice Core: Mathematical Practices and the Practice of Teaching, Central Michigan University, March 2013.

Further Connections Between Algebra & Geometry, North Dakota State Univ., Feb. 2013.

Special Session: Interactions Between Algebraic Geometry and Commutative Algebra, Canadian Mathematical Society (CMS) Summer Meeting, Univ. of Regina, June 2012.

Connections Between Algebra & Geometry, Graduate Workshop, U. of Regina, Summer 2012.

Special Session: Algebraic Geometry and Graded Commutative Algebra, AMS Sectional Meeting, Univ. of Nebraska–Lincoln, Oct. 2011.

KUMUNU 2011, a regional conference on Commutative Algebra & Related Fields, April 2011.

Special Session: Commutative Algebra, Joint Mathematics Meetings, Jan. 2010.

KUMUNU 2009, a regional conference on Commutative Algebra & Related Fields, Sept. 2009.

Special Session: Hilbert Functions & Resolutions, AMS Sectional Meeting, Univ. of British Columbia, Oct. 2008.

Connecting Women in Math Across Canada, University of Alberta, June 2003.

Route 81 Conference on Commutative Algebra & Algebraic Geometry, Queen's Univ., Fall 2002.

Seminar and Colloquium Organization

Colloquium Committee Chair, Dept. of Math., Central Michigan Univ., Aug. 2012–April 2014.

Graduate Student Seminar, Dept. of Math., Central Michigan University, Aug. 2012–April 2014.

Algebra Learning Seminar, Dept. of Math., Central Michigan Univ., Aug. 2012–April 2014.

Algebraic Geometry Seminar, University of Nebraska–Lincoln, Jan. 2009–April 2011.

Pi Mu Epsilon Annual Lecture, Math Club, University of Nebraska–Lincoln, April 2009.

Algebra Seminar, California Polytechnic State University, Sept. 2006–June 2008.

Graduate Student Seminar, Queen's University, Sept. 2000–April 2003.

Postdoctoral Fellow Supervision

Nursel Erey, North Dakota State University, August 2015–present.

Ph.D. Student Supervision

Benjamin Noteboom, Ph.D. Candidate in Mathematics, North Dakota State University, Nov. 2015–present.

Master Student Supervision

Jeffrey Conner, Plan B Master's Paper *Bounding Geometric Invariants Using Coding Theory*, Central Michigan University, Spring 2013.

Jeffrey Fujioka, Plan B Master's Paper *Hilbert Functions of Complete Intersections*, Central Michigan University, Spring 2013.

Jason Pode, Plan B Master's Paper *Connecting Graph Theory and Commutative Algebra via Ideals*, Central Michigan University, Spring 2013.

Megan Stobel, Master's Paper *Flipping Triangles*, University of Nebraska–Lincoln, Spring 2011.

Mary B. Kilnoski, Master's Paper *The Mathematics of the Five Card Trick*, Univ. of Nebraska–Lincoln, Summer 2010.

Graduate Committees

Sara Solhjem, Ph.D. Candidate in Mathematics, North Dakota State Univ., Fall 2015–present (internal member).

Corey Vorland, Ph.D. Candidate in Mathematics, North Dakota State Univ., Fall 2015–present (internal member).

Rashmi Moparthi, M.S. in Computer Science, North Dakota State Univ., final examination Nov. 2015 (external member).

Hannah Altmann, Ph.D. in Mathematics, North Dakota State Univ., final examination June 2015 (internal member).

Jonathan Totushek, Ph.D. in Mathematics, North Dakota State Univ., final examination June 2015 (internal member).

Thomas Dunn, Ph.D. in Mathematics, North Dakota State Univ., final examination May 2015 (internal member).

Undergraduate Student Supervision

Daniel Carmody (Indiana U.), Nicholas Crispi (CUNY), Marie Ermete (Central Michigan U.), National Science Foundation (NSF)-Research Experiences for Undergraduates (REU) Program, Central Michigan University, Summer 2013.

Jordan Wiebe, Honors Project in Group Theory, University of Nebraska–Lincoln, Spring 2011.

Other Student Supervision

Linda Anderson, Internship for Linear Algebra (MTH 223), Central Michigan Univ., Fall 2013.

Jeffrey Fujioka, Graduate Research Assistant, Central Michigan Univ., Fall 2012–Spring 2013.

Cleland Loszewski, Internship for Linear Algebra (MTH 223), Central Michigan U., Spring 2012.

Courses Taught

North Dakota State Univ.	The Power of Monomial Ideals (Math 824)	F 2016
	Cryptology (Math 473/673)	Sp 2016
	Combinatorial Commutative Algebra (Math 793)	F 2015
	Algebra I (Math 720)	F 2015
	Algebra II (Math 721; co-taught)	Sp 2015
	Calculus I (Math 165)	F 2014
	Intro. to Abstract Math. (Math 270)	F 2014
Central Michigan Univ.	Modern Algebra I (MTH 523)	Sp 2014
	Theory of Numbers (MTH 521)	F 2013
	Calculus I (MTH 132)	Sp 2013
	Theory of Associative Rings (MTH 625)	F 2012
	Theory of Groups (MTH 623)	Sp 2012
	College Geometry (MTH 341)	F 2011
Univ. of Nebraska–Lincoln	Number & Operation for K–3 Specialists (Math 800P)	Su 2011
	Intro. to Modern Algebra I (Math 417)	Sp 2011
	Mathematics Matters (Math 300)	F 2010
	The Power of Monomial Ideals (Math 918)	Sp 2010
	Geometry of Schemes (Math 997)	Su 2009, Sp 2010
	Experimentation, Conj. & Reasoning (Math 804T)	Su 2009, 2010
	Joy of Numbers (Math 189H)	F 2009
	Using Math. to Understand Our World (Math 807T)	Sp 2009
	Matrix Theory (Math 314/814)	F 2008
California Polytechnic State Univ., San Luis Obispo	Methods of Proof in Math. (Math 248)	Sp 2008
	Linear Algebra III (Math 406)	W 2008
	Linear Algebra II (Math 306)	F 2007
	Linear Algebra I (Math 206)	Sp 2007
	Calculus III (Math 143)	Sp 2007
	Calculus II (Math 142)	F 2006, W 2007, 2008
	Calculus I (Math 141)	F 2006, 2007
Syracuse Univ.	1st Course in Linear Algebra (MAT 331)	Sp 2006
	Calculus I (MAT 295)	F 2005, Sp 2006
Queen's Univ.	Intro. Linear Algebra for Eng. Students (APSC 174)	W 2003, 2004, 2005
	Differential and Integral Calculus (Math 121)	F 2001, W 2005

Instructional Activities

Teaching and Learning Conference, North Dakota State University, August 2014.

Writing Generally in Every Discipline Workshop, California Polytechnic State Univ., 2006.

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

SGS 901–Teaching and Learning in Higher Education. Semester course, Queen's Univ., 2003.

Program in University Teaching & Learning. Certificates in: Scholarship; Practical Experience; Professional Development. Instructional Development Centre, Queen's Univ., May 2003.

K–12 Mathematics Education Activities

Math Classroom Visits: In Spring 2016 I visited two 1st grade classrooms at Dilworth Elementary School in Dilworth, MN. I facilitated a tangrams activity to encourage students to further explore mathematics not typically seen in the classroom.

Math Day: In Spring 2015 I visited a 4th and a 5th grade classroom at Bennett Elementary School in Fargo, ND and facilitated studying Tic-Tac-Toe on the torus to encourage students to further engage in mathematics. The event concluded with a Math Fair at North Dakota State University for all elementary school children in Fargo at which I facilitated further activities.

Math in the Middle Institute Partnership: This is a National Science Foundation (NSF)-funded Math Science Partnership at the University of Nebraska–Lincoln. In the program middle-level teachers (grades 5–8) from across Nebraska work towards a master's degree. Via this program I have been involved in the following:

- Taught *Using Math to Understand Our World* (Math 807T), Spring 2009. The course is a full-semester, applied mathematics, project-based, distance course.
- Modified the full-semester course *Experimentation, Conjecture, and Reasoning* (Math 804T) for an intense summer session. I taught this course in Summers 2009 and 2010.
- Teachers in the program are required to write an expository paper. I designed two topics (*The Mathematics of the Five Card Trick* and *Flipping Triangles*) and advised the teachers (M. B. Kilnoski and M. Stobel) working on the papers in Summer 2010 and Spring 2011.
- I worked with 5th grade teacher K. Hall to adapt projects from Math 807T for her class.

Center for Science, Mathematics and Computer Education: In Fall 2010–Summer 2011 I held a joint position between the University of Nebraska–Lincoln's Department of Mathematics and the Center for Science, Mathematics and Computer Education. My activities involved various projects with both K–12 teachers and faculty from other disciplines. Activities included:

- *The Mathematics Semester* for pre-service elementary teachers. This is a unique integration of a mathematics course, a pedagogy course, and practical experience. Joint with M. Ding, R. Heaton from the Dept. of Teaching, Learning, and Teacher Education & J. Lewis from the Dept. of Math., I researched how to further develop this semester both for improving mathematics teacher training and building a strong partnership between a mathematician and mathematics educator.
- Organizing a Teachers' Circle in Omaha, Nebraska. The goal for this activity is to regularly bring together teachers and mathematicians to explore deep yet accessible mathematics.
- Taught *Number and Operation for K–3 Math Specialists* (Math 800P). This course is part of the NSF-grant funded program **Primarily Math** and has an audience of in-service teachers.

Sonia Kovalevsky Festival: In October 2005 I organized and facilitated a session for middle-level teachers as part of this festival at Syracuse University. The goal of the session was to demonstrate mathematics activities that could be used in the classroom. The activity demonstrated was the *Red Hat Problem*.

Day Math Camps: In June 2000 and 2001 I co-organized (with Leo Jonker) day camps for elementary-school students at Queen's University. At these camps I facilitated a number of activities with the goal of encouraging the students to further study mathematics.

Other Service and Outreach Activities

Graduate Committee Member, Department of Mathematics, North Dakota State University, Jan. 2015–present.

Faculty Advisor for undergraduate and beginning graduate students, North Dakota State University, Jan. 2015–present.

Visitors Committee Member, Department of Mathematics, North Dakota State University, Jan. 2016–present.

Three-year Administrative Review of Dr. Duncan, Chair of Department of Mathematics, Committee Member, North Dakota State University, March 2016–May 2016.

Search Committee Member, Department of Mathematics, North Dakota State University, Sept. 2015–May 2016.

Curriculum Committee Member, Department of Mathematics, North Dakota State Univ., Oct. 2014–Dec. 2015.

Algebra Preliminary Exam Committee Member, North Dakota State University, August 2016 (chair), May 2016 (chair), Sept. 2015 (chair), June 2015.

First Year Experience Advisory Council Member, Academic Senate, Central Michigan Univ., Aug. 2013–Aug. 2014.

Degrees, Admissions, Standards, and Honors Committee Member, Academic Senate, Central Michigan University, Aug. 2012–Aug. 2014.

Graduate Committee, Department of Math., Central Michigan Univ., Fall 2013–Spring 2014.

Faculty Advisor, Dept. of Math., Central Michigan University, Spring 2012–Aug. 2014.

Department of Mathematics Liaison with the Association for Women in Mathematics (AWM), Central Michigan University, Sept. 2012–Aug. 2014.

Department of Mathematics Liaison with the Mathematical Association of America (MAA), Central Michigan University, Sept. 2011–Aug. 2014.

Faculty Advisor for "On the Rox" (a cappella group), Central Michigan University, Aug. 2012–Aug. 2014.

Algebra Qualifying Exam Committee Member, Central Michigan University, Jan. 2012, Jan. 2013 (chair), Aug. 2013 (chair), Jan. 2014.

Marketing Task Force Member, College of Science and Technology, Central Michigan Univ., Aug. 2012–Spring 2013.

Chair Review Committee Member, Dept. of Math., Central Michigan Univ., Spring 2013.

Faculty Assistant, Graduate Assistant Teaching Workshop, Dept. of Math., Central Michigan Univ., Aug. 2012. (Lead the session entitled *Balancing Teaching and Studying: The Life of a Graduate Student*.)

Scholarships & Awards Committee Member, Department of Mathematics, Central Michigan University, Sept. 2011–Aug. 2012.

Faculty Program organizer, Nebraska Conference for Undergraduate Women in Math., Univ. of Nebraska–Lincoln, Jan. 2010 and Jan. 2011.

Panelist for *Careers Using Math.*, Nebraska Conference for Undergraduate Women in Math., Univ. of Nebraska–Lincoln, Jan. 2010.

Panelist for *Mathematical Careers*, IMMERSE Program, Univ. of Nebraska–Lincoln, July 2009.

Algebra Grad. Exam Committee Member, California Polytechnic State U., Sept. 2006–June 2008.

TA Mentor/Liaison, Queen's University, Sept. 2004–April 2005.

Organizer of Marking Session, Teaching Assistant Workshop, Queen's University, Sept. 2004.

Student Committee Co-chair, Canadian Mathematical Society (CMS), July 2002–June 2004.

CMS Board Member, Jan. 2000–June 2004.

CMS Student Committee Member, 1998–2004.

Member of the Math Headship Committee, Queen's University, Fall 2003.

Co-organizer of the Teaching Assistant Workshop, Queen's University, Sept. 2001 and 2002.

CMS Judge, Canada-Wide Science Fair, Queen's University, May 2001.

Student Representative, Dept. of Mathematics & Statistics, University of Regina, 1997–1998.

Professional Memberships

American Mathematical Society (AMS).

Association for Women in Mathematics (AWM).

Canadian Mathematical Society (CMS).

Mathematical Association of America (MAA).

Pacific Institute for the Mathematical Sciences (PIMS).