Sarah Mayes-Tang

CONTACT INFORMATION	Department of Mathematics	E-mail: mayes-tang@math.toronto.edu
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EDUCATION

University of Michigan, Ann Arbor, Michigan USA

Ph.D. Mathematics, May 2013

M.S. Mathematics, May 2011

Queen's University, Kingston, Ontario Canada

B.Sc. (Honours) in Mathematics with Distinction, June 2008

ACADEMIC EMPLOYMENT

University of Toronto, Toronto, Ontario Canada

Assistant Professor, Teaching Stream, Mathematics, 2017–

Quest University Canada, Squamish, British Columbia Canada

Professor, Mathematics, 2013–2017

TEACHING AND COURSE DESIGN

University of Toronto, Toronto, Ontario

Instructor *MAT301H1: Symmetry and Groups*	Winter 2022
Instructor *MAT246H1: Introduction to Abstract Mathematics ("mathematical masterpieces")*	Fall 2021
First-Year Seminar Instructor *MAT193H1: Women's Mathematics*	Fall 2021
Instructor *Independent study in learning proof*	Summer 2021
Instructor *Arrive Ready - Mathematics!*	Summer 2021
First-Year Seminar Instructor *MAT193H1: Mathematics through Literature & Poetry*	Winter 2021
Course Coordinator and Instructor *MAT136H1: Calculus 1(B)*	Winter 2018–2021
Course Coordinator and Instructor *MAT135H1: Calculus 1(A)*	Fall 2017–2020
Math Curriculum Writer *Woodsworth STEM Bridging Program*	2019–20

Quest University Canada, Squamish, British Columbia

Cryptology: The Mathematics of Secrecy and Security	Fall 2016, Spring 2017
Real Analysis	Spring 2015, Spring 2017
Question	Spring 2016, Spring 2017
Algorithms in Commutative Algebra (independent study)	Spring 2016
Abstract Algebra: The Mathematics of Symmetry	Spring 2016, Spring 2014
Calculus 1: The Spirit of Calculus	Fall 2013–2016
Calculus 2: The Practice of Calculus	Spring 2016, Fall 2013–16
Cornerstone: What is Knowledge?	Fall 2013–2015
Theme Stream: Creativity in Mathematics	Spring 2015
The Mathematical Experience	Spring 2014-2015

University of Michigan, Ann Arbor, Michigan

Teaching Assistant, *Introduction to Algebraic Geometry*	Fall 2012
Instructor, *Math for Elementary School Teachers*	Fall 2011
Instructor, *Introductory Calculus Program*	2008–2011

COURSE
COORDINATION

MAT135/136 Course Coordinator, University of Toronto   2017–2020
- Managed teams of 10 to 12 instructors and 30 to 45 TAs
- Designed learning goals, assessments, homework, tutorials, and other curricular material
- Administered courses
- Conducted classroom observations of instructors

PUBLICATIONS

Powers of graphs & applications to resolutions of powers of monomial ideals with Susan M. Cooper, Sabine El Khoury, Sara Faridi, Susan Morey, Liana M. Sega, Sandra Spiroff, *Research in the Mathematical Sciences*, to appear (2022).

Morse resolutions of powers of square-free monomial ideals of projective dimension one. With Susan M. Cooper, Sabine El Khoury, Sara Faridi, Susan Morey, Liana M. Sega, Sandra Spiroff. *Journal of Algebraic Combinatorics*, to appear.

Sharing Our Stories to Build Community, Highlight Bias, and Address Challenges to Authority. to appear in *Picture a Professor: Intersectional Teaching Strategies for Interrupting Bias about Faculty and Increasing Student Learning*, edited by Jessamyn Neuhaus. West Virginia University Press, 2021.

Simplicial resolutions for the second power of square-free monomial ideals (with Susan Cooper, Sabine El Khoury, Sara Faridi, Susan Morey, Liana M. Sega and Sandra Spiroff). *Women in Commutative Algebra – Proceedings of the 2019 WICA Conference AWM Series.* (Claudia Miller, Janet Striuli, Emily E. Witt). Springer, 2022. Pages 193–205.

Teaching Focused Jobs - How to find the one that fits you best *Notices of the American Mathematical Society*, 817–818 (June/July 2020).

Telling Women's Stories: A Resource for College Mathematics Instructors. *Journal of Humanistic Mathematics*, **9.2**, 78–92 (2019).

The Bookshelf: The Art of Logic in an Illogical World. *Math Horizons*, **27(1)**, 29 (2019).

Designing Opportunities for Mathematical Creativity: Three ways to modify an existing course. *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies* **30(3)**, 261–273 (2020).

Stabilization of Boij-Söderberg Decompositions of Ideal Powers, *Journal of Pure and Applied Algebra*, **223.2**, 571–579 (2019).

Using our Classroom Walls: A Project for Visualizing the Development of Conceptual Understanding, *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies*, **28.3**, 223–235 (2018).

Asymptotic Stabilization of Betti Diagrams of Generic Initial Systems, *Illinois Journal of Mathematics*, **60.3-4**, 845–858 (2016).

The Symbolic Generic Initial System of Almost Linear Point Configurations in $\mathbb{P}^2$, *Rocky Mountain Journal of Mathematics*, **46(1)**, 283-299 (2016).

Non-simplicial decompositions of Betti diagrams of complete intersections (with Courtney Gibbons, Jack Jeffries, Claudiu Raicu, Branden Stone, and Bryan White), *Journal of Commutative Algebra*, **7(2)**, 189–206 (2015).

The Generic Initial Ideals of Powers of a 2-Complete Intersection, *Journal of Commutative Algebra*, **7(1)**, 55–75 (2015).

The Asymptotic Behaviour of Symbolic Generic Initial Systems of Generic Points, *Journal of Pure and Applied Algebra*, **218**, 381–390 (2014).

The Limiting Shape of the Generic Initial System of a Complete Intersection, *Communications in Algebra*, **42**, 2299–2310 (2014).

PREPRINTS	Simplicial Resolutions of Powers of Square-free Monomial Ideals. With Susan M. Cooper, Sabine El Khoury, Sara Faridi, Susan Morey, Liana M. Sega, Sandra Spiroff, (2022).

GRANTS

University of Toronto LEAF Grant   2020–2021
    Revitalizing & Expanding the Preparing for University Mathematics Program
    with M. Burke, S. Cohen, S. Hendrickson, A. Iorgulescu, A. Stickel, A. VanBeek

Teaching Stream Pedagogical Grant, Faculty of Arts & Science   2019
    Building Connections & Knowledge for Math Education Research

Faculty of Arts & Science Teaching and Learning Grant   2018–2019
    Professional Development for Calculus TAs and Course Instructors

ATLAS Grant, Faculty of Arts & Science, University of Toronto   2018–2021
    Making calculus relevant: connections and applications for MAT135/136

FELLOWSHIPS AND AWARDS

University of Toronto Teaching Fellowship	2018–2019
Project NExT Fellow, Mathematical Association of America	2014–2015
One-year program for math faculty focused on teaching	
Allen L. Shields Memorial Fellowship, University of Michigan	2013
Rackham One-Term Dissertation Fellowship, University of Michigan	2012
NSERC Postgraduate Scholarship D	2010-2012
Cameron & John Courtney Scholarship, University of Michigan	2009
NSERC Postgraduate Scholarship M	2008-2010
NSERC Canada Graduate Scholarship M	2008
Declined	
Ontario Graduate Scholarship	2008
Declined	

INVITED TALKS	**CANSSI Ontario Applied Research and Education Seminar**, Virtual

CANSSI Ontario Applied Research and Education Seminar, Virtual
- *Designing Creative Courses with Students in Mind* , plenary talk   Fall 2021

Canadian Math Education Study Group Meeting, Virtual
- *Teaching on Empty: Trauma, Achievement, and What's Next in Our Math Education Community*, plenary talk   Summer 2021

Association for Women in Mathematics University of Toronto, Virtual
- *A Graph of One's Own*   Fall 2020

Canadian Mathematical Society Winter Meeting, Toronto ON
- Plenary: *Listening Before Teaching: Building mathematical understanding by understanding our students*   Winter 2019

Colloquium, Queen's University
- *Why we share our stories*   Fall 2019

Graduate Student Seminar, University of Michigan
- *Why we share our stories*   Spring 2019

A Celebration of Women in Mathematics, The Fields Institute
- Keynote: *Why we share our stories*   Spring 2019

Waterloo Teaching & Learning Conference, University of Waterloo   Spring 2019
- Plenary: *Active Learning: Engaging International Students*   Spring 2019

Impact of Women on Research and Education in Mathematics, BIRS
- *Using women's stories in a first-year mathematics seminar*   Spring 2018

Combinatorial Commutative Algebra, Mathematical Congress of the Americas
- *Betti tables of graded systems of ideals*   Summer 2017

Recent Advances in Commutative Algebra, CMS Winter Meeting
- *Betti tables of graded systems of ideals*   Winter 2016

AMS-AWM Special Session on Commutative Algebra, Joint Math. Meeting
- *Stabilization of Boij-Söderberg decompositions of systems of ideals*   Winter 2016

Algebraic Geometry Seminar, Queen's University
- *Asymptotic Behaviour of Generic Initial Systems*   Spring 2015

Commutative Algebra: Interactions with Algebraic Combinatorics, Algebraic Geometry, and Representation Theory, CMS Winter Meeting
- *Boij-Söderberg Decompositions of Families of Ideals*   Fall 2014

Special Session on Commutative Algebra, AMS Southeastern Section Meeting
- *Asymptotic Behaviour of Generic Initial Systems*   Spring 2013

Commutative Algebra Seminar, University of Michigan
- *Asymptotic Behaviour of Generic Initial Systems* Fall 2012

Algebraic Geometry Seminar, University of Michigan
- *Asymptotic Behaviour of Generic Initial Systems* Winter 2012

OTHER TALKS **Canadian Mathematical Society Winter Meeting**, Virtual
- *Using stories to learn math in a first year seminar* Winter 2020

Building Teaching Teams, MAA MathFest, Cincinnati OH
- *A Calculus Community of Practice* (with Mihai Nica) August 2019

Faculty of Arts & Science Community of Practice , University of Toronto
- *Course-Based TA Training* April 2019

Mathematical Themes in a First-Year Seminar, MAA MathFest, Denver CO
- *A First-Year Seminar on Mathematical Creativity* August 2018

Undergraduate Math Union, University of Toronto
- *The Importance of Being Integral* January 2018

Math Club, Quest University Canada
- *The Importance of Being Integral* January 2017
- *∞: A Finite Introduction* April 2015
- *Dieting and Counting Coins: An Introduction to Gröbner Bases* February 2014

Student Algebraic Geometry Seminar, University of Michigan
- *An Introduction to Asymptotic Multiplier Ideals* Winter 2011

Student Commutative Algebra Seminar, University of Michigan
- *Applications of Commutative Algebra to Game Theory* Spring 2013
- *The Eliahou-Kervaire Resolution* Fall 2012
- *Deformations from Gröbner Basis Theory* Fall 2012
- *Linear Resolutions and Componentwise Linear Ideals* Winter 2012
- *Monomial Ideals and Gröbner Bases* Winter 2012
- *An Introduction to Generic Initial Ideals* Fall 2011
- *Generic Initial Ideals, Regularity, and Saturation* Winter 2011

PROGRAMS	NSERC Women in Science and Engineering Network of Collaborators	2021-22
	CTSI SoTL Group Pilot	2021-22
	AMS Short Course in Math. & Comp. Methods for Complex Social Systems	January 2021
	Course Design for Online Training Program (CTSI)	July 2020
	BIRS Women in Commutative Algebra	October 2019
	BIRS Innovations in Instructor Training	June 2019
	CTSI Scholarship of Teaching and Learning Cohort	June 2018–May 2019
	Faculty Learning Communities Institute	June 2018
	BIRS Impact of Women on Research and Education in Mathematics	March 2018
	BIRS Free Resolutions, Representations, and Asymptotic Algebra	April 2016
	Mathematics Research Community: Commutative Algebra	June 2015
	MSRI Summer Graduate Workshop: Commutative Algebra	June 2011
CONFERENCES ATTENDED	Designing Mathematical Pathways for Equity (Virtual)	May 2021
	CTSI Teaching and Learning Symposium (Virtual)	May 2021
	Canadian Mathematical Society Summer Meeting (Virtual)	June 2021
	Canadian Math Education Study Group Meeting (Virtual)	June 2021
	MathFest (Virtual)	August 2021
	Minds Redefined Conference (Virtual)	February 2022
	ParaDIGMS Conference on Diversity in Graduate Mathematical Sciences (Virtual, ISMI) 2021	April
	Canadian Mathematical Society Winter Meeting (Virtual)	December 2020
	Canadian Computational Neuroscience Spotlight (Virtual)	May 2020
	First Year Math in Canada Conference (Virtual)	May 2020
	Canadian Mathematical Society Winter Meeting (Toronto ON)	December 2019
	MAA MathFest (Cincinnati OH)	August 2019
	Wiley Teaching and Learning Summit (Miami FL)	February 2019
	UofT Teaching & Learning Symposium (Toronto ON) • Poster: *The impact of weekly TA training on teaching confidence*	May 2019
	McMaster Research on Teaching and Learning Conference (Hamilton ON)	December 2018
	MAA MathFest (Denver CO)	August 2018
	Canadian Math Education Study Group (Squamish BC) • Poster: *Teaching Assistant Training in a Large, Multi-Section Calculus Course*	June 2018
	First Year University Mathematics Across Canada (Fields Institute, Toronto ON)	April 2018
	Mathematical Congress of the Americas (Montreal QC)	July 2017
	CMS Winter Meeting (Niagara Falls ON)	December 2016

Joint Mathematics Meeting (Seattle WA)	January 2016
MAA MathFest (Washington DC)	August 2015
Joint Mathematics Meetings (San Antonio TX)	January 2015
CMS Winter Meeting (Hamilton ON)	December 2014
MAA MathFest (Portland OR)	August 2014
Changing the Culture (Vancouver BC)	May 2014
AMS Southeastern Section Meeting (Oxford, MS)	March 2013
Route 81 Conference (Kingston ON)	October 2012
MSRI Connections for Women (Berkeley CA)	August 2012
Canadian Mathematical Society Summer Meeting (Regina SK)	June 2012
Workshop on Connections Between Algebra and Geometry (Regina SK)	May 2012
Canadian Mathematical Society Winter Meeting (Toronto ON)	December 2011

ADDITIONAL TEACHING DEVELOPMENT

Magna Online Courses, Taking Your Teaching Online — Summer 2020

Faculty of Arts and Sciences, Suicide Prevention Training, — Summer 2020

Centre for Teaching Support and Innovation, University of Toronto
- Assessment Alternatives: Online options and open book exams — Summer 2020
- Introduction to peerScholar — Summer 2020
- Introduction to TeamUp! Summer 2020
- Setting the Tone for the First Day of Class — Summer 2018
- Engaging Work-Study Students in teaching and learning projects — Summer 2018
- Scholarship of Teaching and Learning Faculty Cohort — Summer 2018–Spring 2019
- Peer-2-Peer Mentoring Program — 2017–2018
- Data-Driven Design — Spring 2018

Faculty of Arts & Science, University of Toronto
- Arts & Science Teaching & Learning Symposium — Spring 2018
- Teaching and Learning Community of Practice — 2018–20

Quest University Canada
- Teaching Triad member (with history and economics faculty) — 2014–2017

Centre for Research on Learning and Teaching, University of Michigan
- Graduate Teaching Certificate — Fall 2012
- Training for Multicultural Classroom Facilitation (six sessions) — Fall 2011
- Teaching Undergraduates in the Archives — Winter 2010
- Using Technology to Save Time and Enhance Learning — Winter 2010

Department of Education, University of Michigan
- Mathematics Curriculum: Research and Development (EDUC 783) — Winter 2012
- Research in Mathematics Education (EDUC 711) — Fall 2009

OUTREACH	**WISE Toronto**	
	• Panel Discussion,	Summer 2020
	• *My Path to Math* Talk, STEMpowerment Conference	Fall 2019
	Count Me In (Conference for K-12 Teachers)	
	• How Things Change: Activities to Foster Calculus Thinking	Summer 2019
	Toronto District School Board	
	• Speaker for Girls in STEM Evening at Grey Owl Public School	Spring 2019
	Young Women in Business Toronto	
	• Panelist for *Forage Ahead: Women Breaking Barriers in STEM*	Fall 2018
SERVICE TO PROFESSION	Memver of Toronto Initiative for Diversity and Excellence (TIDE)	2020–21
	CMS Winter Meeting 2019, Paper Session 'Teaching strategies for increasing diversity in math'	
	Co-organizer (with Nnenna Asidianya, Cindy Blois)	2019
	MathFest 2019, Contributed Paper Session on 'Building Teaching Teams'	
	Co-organizer (with Jessica Deshler)	2019
	Joint Mathematics Meeting 2016, 'AMS Special Session on Commutative Algebra'	
	Co-organizer (with Linquan Ma and Jonathan Montaño)	2016
	MAA MathFest 2015, 'Concrete Computations in Algebra and Algebraic Geometry'	
	Co-organizer (with Karen Smith)	2015
	Reviewer, *Zentralblatt*	2017–2019
	Referee	2014–2019
	Communications in Algebra, Journal of Humanistic Mathematics, *Journal of Commutative Algebra,* *Journal of Pure and Applied Algebra, Journal of Symbolic Computation,* *PRIMUS: Problems, Research, and Issues in Mathematics Undergraduate Studies*	
UNIVERSITY SERVICE	Women in Math, University of Toronto Department of Mathematics	2018–2021
	Organized regular gatherings	
	Instructor & TA Training, University of Toronto Department of Mathematics	2018–21
	Equity & Diversity Committee, University of Toronto Department of Mathematics	2020–2021
	Teaching Stream Hiring Committee, University of Toronto Department of Mathematics 2017–18	2020–21,
	First Year Foundations Council, University of Toronto Faculty of Arts & Science	2019–21
	Workshops for first-year students	2018–20
	Organized studying and student success workshops for first-year students *Helped to organize and deliver departmental orientation*	
	Advised Undergraduate AWM Student Club (2019-20)	

Teaching Assistant and Instructor Training, UofT Department of Mathematics 2017-2021
Organized and presented at Departmental TA and Instructor training programs
Conducted in-class observations of instructors
Authored and disseminated resources for instructors and TAs
Designed weekly training program for TAs
Integrated training into instructor meetings
Designed and implemented a Community of Practice for calculus instructors

Undergraduate Studies Committee, University of Toronto Department of Mathematics 2017–2020

Mentor for *Teaching Large Courses*, University of Toronto Department of Mathematics 2017–2018

Faculty Grievance Committee, Quest University
Elected member of committee managing academic freedom & review grievances 2015–2017

Transfer Credit Committee, Quest University
Elected member of committee responsible for awarding transfer credit 2016–2017

Math Club, Quest University
Organizer of math talks for undergraduate students 2014–2017

Faculty Development Committee, Quest University
Designed and implemented Quest's teaching development programs for faculty 2014–2017

Education Journal Club, Quest University
Organizer of reading group on post-secondary educational research 2014–2017

Animal Care Committee, Quest University
Chair of committee overseeing work with animals in research & teaching 2016–2017

Respect Working Group, Quest University
Worked on new developing new policies related to student-faculty interaction 2016

Academic Council, Quest University
Elected Secretary of academic governance body 2014–2016

Tri-Council Institutional Eligibility Application, Quest University
Organizer of institutional application for Tri-Council eligibility 2015–2016
Wrote Responsible Conduct of Research Policy for University 2015

Student Evaluation of Teaching Committee, Quest University
Member of committee researching and writing new SETs 2015–2016

Faculty contact for 'Take 10' program, Quest University Admissions 2014–2016

Faculty Orientation Planning Committee, Quest University
Chair of committee organizing orientation for new faculty and fellows 2014

Course Planning Advisory Committee, Quest University 2013–2014
Member of committee restructuring course scheduling 2015

Strangway Scholarship Selection Committee, Quest University 2014
Member of committee selecting scholarship recipients 2015

UNDERGRADUATE PROJECTS SUPERVISED	Undergraduate Research Assistants: *Communication projects in calculus*	2020
	Research Opportunity for Undergraduates: *Investigating success in calculus courses*	2019
	Deanna Kronenberg	2018
	Aaron Slobodin, *Betti table stabilization of homogeneous monomial ideals*	2018
	Rose Johnson-Leiva, *Cutting up a Higher Dimensional Donut: 3-Torus Graph Embeddings*	2017
	Geoffrey Thom, *Multimedia in Mathematics Education*	2016