Curriculum Vitae of Tara Taylor

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Name: Tara D. Taylor
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Birthdate: 17/09/1974
Birthplace: Winnipeg, Manitoba, Canada
Citizenship: Canadian

Appointments

- Full Professor in the Department of Mathematics and Statistics, St. Francis Xavier University, September 1, 2019 to present
  - Half-Sabbatical Leave (January 1, 2024 through June 30, 2024)
- Associate Professor in the Department of Mathematics, Statistics and Computer Science, St. Francis Xavier University, September 1, 2009 to August 31, 2019
  - Sabbatical Leave (July 31, 2010 through June 30, 2011)
  - Maternity Leave (September 10, 2009 through April 12, 2010)
  - Maternity Leave (December 8, 2016 through April 10, 2017)
  - Half-Sabbatical Leave (January 1, 2018 through June 30, 2018)
- Managing editor (North and South America) for *Fractals*, December 2014-present
- Assistant Professor in the Department of Mathematics, Statistics and Computer Science, St. Francis Xavier University, August 1, 2004 to August 31, 2009 (tenure-track as of July 1, 2005 and granted tenure December 2008)
- Sessional instructor in the Department of Mathematics and Statistics, Dalhousie University, September 2001 to July 2003.

Education

- Doctor of Philosophy (Mathematics), Dalhousie University. Thesis: "Computational Topology and Fractal Trees", under supervision of Dr. Dorette Pronk. Successfully defended May 2005, convocation in October 2005.
- Master of Science (Mathematics), Dalhousie University, October 2000. Thesis: "Spatially Self-Similar Spherically Symmetric Cosmological Models With Two Scalar Fields", under supervision of Dr. Alan Coley.
- Bachelor of Science (Mathematics), The University of Winnipeg, June 1996.

Scholarly Interests

- **Fractals**: Sierpiński Relatives, fractal trees, self-similarity, iterated function systems, Cantor sets, convex hulls of fractals, applications, new ways to classify and characterize fractals
- **Topology**: computational topology, homology of derived spaces to develop new ways to analyze fractals and other objects, using topological properties to study chains
- **Geometry**: Golden ratio, tilings, symmetries and symmetry groups, tilings and friezes connections to art
- **Connections between Math and Art**: mathematical thinking in textile arts and other arts, golden ratio and fractals, topology and symmetries of objects
- **Math Education**: using service learning in math courses, different learning and teaching styles, connecting math and art, the importance of diagramming
- **Math Outreach**: women in math, connecting math and art, math camps
- **Cosmology**: using dynamical systems to study cosmological models

Collaborators

- I have been a member of the research group MathWeave (http://mathweave.teknollogy.com) since 2012. The other members are: Eva Knoll (leader, math educator), Wendy Landry (weaver and art educator), Paul Carreiro (teacher), Katie Puxley (archivist). This group continues to research the mathematical thinking and knowledge that is connected with the arts, particularly with textile arts. We write scholarly articles, give workshops on math and art, and provide resources.
- Eva Knoll, MathWeave, Department of Mathematics, University of Québec at Montréal, Montréal, QC (topology of chains, math education, mathematics and textile arts, diagramming)
- Susan Gerofsky, Department of Curriculum and Pedagogy, Faculty of Education, University of British Columbia, Vancouver, BC (math education, mathematics and the arts)
- Franklin Mendivil, Department of Mathematics and Statistics, Acadia University, Wolfville, NS (Cantor sets, iterated function systems, fractals)
- Dorette Pronk, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS (fractals, topology, category theory)
- Lisa Lunney Borden, School of Education, St. Francis Xavier University, Antigonish, Nova Scotia (math education, math outreach)

Refereed Publications

1. "Playing with Connections and Variations: Golden Sierpinski Spirals", by Tara Taylor, to appear in *Proceedings of the Bridges Richmond 2024 Conference Mathematics, Art, Music, Architecture, Culture* ed. Helena Verrill, Tessellations Publishing, August 2024.
2. "Using Triangle Sierpinski Relatives to Visualize Subgroups of the Symmetries of the Squares", by Tara Taylor, *Proceedings of the Bridges Halifax 2023 Conference Mathematics, Art, Music, Architecture, Culture*, eds. Eve Torrence and Judy Holdener, Tessellations Publishing, pages 141-148, 2023.
3. "Topological Bar-codes of Sierpiński Relatives with Triangle Convex Hulls", by T. D. Taylor and S. Rouse, *Fractals*, Volume 30, Number 9, 2250169, 2022.
4. "Mathematical Inspiration for Color Choices in Oblique, Open-work Weaving", by Eva Knoll and Tara Taylor, in *Leonardo*, Volume 55, Issue 1 (October 2022).
5. "Integrated Teaching: Bridging the Gap" by Eva Knoll, Paul Carreiro, Tara Taylor, Katie Puxley and Wendy Landry, in proceedings of the MACAS (Mathematics and its Connections to the Arts and Sciences) Conference (held in Montreal, June 2019), 2019.
6. "Convex Hulls of Sierpiński Relatives", by T.D. Taylor and S. Rowley, in *Fractals*, Volume 26, Number 6, 1850098, 2018.
7. "The Beauty of the Symmetric Sierpiński Relatives", by Tara Taylor, *Proceedings of the Bridges Stockholm 2018 Conference Mathematics, Art, Music, Architecture, Education, Culture*, eds. Eve Torrence, Bruce Torrence, Carlo Séquin, and Kristóf Fenyvesi, Tessellations Publishing, pages 163-170, 2018.
8. "Experiencing Group Structure: Observing, Creating and Performing the Plain Hunt on 4 via Music, Poetry, Visual and Culinary Arts", by Susan Gerofsky, Eva Knoll, Tara Taylor and Avalon Campbell-Cousins, *Proceedings of the Bridges Stockholm 2018 Conference Mathematics, Art, Music, Architecture, Education, Culture*, eds. Eve Torrence, Bruce Torrence, Carlo Séquin, and Kristóf Fenyvesi, Tessellations Publishing, pages 659-666, 2018.
9. "The Aesthetics of Colour in Mathematical Diagramming" by Eva Knoll, Tara Taylor, Wendy Landry, Paul Carreiro, Katie Puxley and Karyn Harrison, *Proceedings of Bridges 2017: Mathematics, Art, Music, Architecture, Education, Culture*, eds. David Swart, Carlo H. Séquin, and Kristóf Fenyvesi, Tessellations Publishing, pages 563-570, 2017.
10. "Exploring Concepts from Abstract Algebra Using Variations of Generalized Woven Figure Eights" by Tara Taylor, Eva Knoll and Wendy Landry, *Primus* Volume 26, Number 4 (Special Issue on Mathematics and the Arts in the Undergraduate Classroom), pages 297-311, 2016.
11. "The Aesthetics of Scale: Weaving Mathematical Understandings", by Eva Knoll, Wendy Landry, Tara Taylor, Paul Carreiro and Susan Gerofsky, *Proceedings of Bridges 2015: Mathematics, Music, Art, Architecture, Culture*, eds. Kelly Delp, Craig S. Kaplan, Douglas McKenna and Reza Sarhangi, Tessellations Publishing, pages 533-540, 2015.
12. "Using Epsilon Hulls to Characterize and Classify Totally Disconnected Sierpiński Relatives", by T.D. Taylor, in *Fractals*, Volume 23, Number 2, 1550015, 2015.

13. "Mat Weaving: Towards the Mobius Strip", by Eva Knoll, Wendy Landry and Tara Taylor, *Proceedings of Bridges 2013 Conference: Mathematics, Music, Art, Architecture, Culture*, eds. George Hart and Reza Sarhangi, Tessellations Publishing, pages 181-188, 2013.

14. "Examples of Using Binary Cantor Sets to Study the Connectivity of Sierpiński Relatives", by T.D. Taylor, C. Hudson and A. Anderson, in *Fractals*, Volume 20, Number 1, pages 61-75, 2012.

15. "Connectivity Properties of Sierpiński Relatives", by T.D. Taylor, in *Fractals*, Volume 19, Number 4, pages 481-506, 2011.

16. "Excursions Through a Forest of Golden Fractal Trees", by T. D. Taylor, in *The Beauty of Fractals: 6 Different Views*, eds. Denny Gulick and Jon Scott, Mathematical Association of America (MAA), pages 35-50, 2010.

17. "A New Classification of Non-overlapping Symmetric Binary Fractal Trees Using Epsilon Hulls", by T. D. Taylor, in *Fractals*, Volume 17, Number 3, pages 365-384, September 2009.

18. "Topological Bar-codes of Fractals", by T. D. Taylor, *Convex and Fractal Geometry*, Volume 84, Banach Center Publications, pages 181-216, 2009.

19. "Exploring Some of the Mathematical Properties of Chains", by Eva Knoll and Tara Taylor, *Proceedings of Bridges 2009: Mathematics, Music, Art, Architecture, Culture*, eds. Craig S. Kaplan and Reza Sarhangi, Tarquin Books, pages 379-382, 2009.

20. "Thin Sets with Fat Shadows: Projections of Cantor Sets", by F. Mendivil and T. D. Taylor, in *The American Mathematical Monthly*, Volume 115, Number 5, pages 451-456, 2008.

21. "Golden Fractal Trees", by T. D. Taylor, *Proceedings of Bridges 2007: Mathematical Connections in Art, Music and Science*, eds. Reza Sarhangi and Javier Barrallo, Tarquin Publications, pages 181-188, 2007.

22. "Homeomorphism Classes of Self-contacting Symmetric Binary Fractal Trees", by Tara D. Taylor, in *Fractals*, Volume 15, Number 1, pages 9-25, 2007.

23. "Self-Similar Spherically Symmetric Cosmological Models With Two Scalar Fields", by A. A. Coley and T. Taylor, in *Classical and Quantum Gravity*, Number 18, pages 4213-4237, 2001.

Other Publications

1. "Weaving Together Research and Teaching" by Tara Taylor, in *Notes of the Canadian Mathematical Society* Volume 54, Number 4, September 2022.

2. "Returning to our Roots: Exploring Collaborative Possibilities for Research and Teaching in Mathematics and Mathematics Education" by Kathy Nolan, Sarah Mathieu-Soucy and Tara Taylor (co-supervisors), report from the Working Group on Math and Math Education Research Collaborations, Proceedings of the Canadian Mathematics Education Study Group annual meeting, June 2021.

3. "Making Art, Doing Math" by Eva Knoll and Tara Taylor (co-supervisors), report from the Working Group on Math and Art, Proceedings of the Canadian Mathematics Education Study Group annual meeting held in St. John's, Newfoundland, June 2011.
4. "Making Connections in Math: Some Specific Outreach Activities", by Tara Taylor, in the report of the Working Group on Outreach in Mathematics, Proceedings of the Canadian Mathematics Education Study Group annual meeting held in Fredericton, New Brunswick, June 2007.
5. "A Grad Student at the Laval Meeting" in *Canadian Mathematical Society Notes*, Volume 34, Number 5, September 2002.

Grants and Awards

Awarded StFX Outstanding Teaching Award, May 2020.

Research

- StFX University Research/Publication/Teaching Award (awarded June 2023)
- StFX University Research/Publication/Teaching Award (awarded June 2021)
- StFX University Committee on Research (UCR) grant for summer research student in the amount of $\$7,000$ (awarded April 2021)
- StFX University Research/Publication/Teaching Award (awarded June 2020)
- StFX University Research/Publication/Teaching Award (awarded June 2019)
- StFX University Research/Publication/Teaching Award (awarded June 2018)
- StFX University Research/Publication/Teaching Award (awarded June 2017)
- StFX University Research/Publication/Teaching Award (awarded June 2016)
- Atlantic Association for Research in the Mathematical Sciences Collaborative Research Group Grant for "Iterated Function Systems(IFS), Fractals, Invariant Measures and Applications", co-organizer with Franklin Mendivil (co-organizer), Acadia, and Shafiqul Islam (principal organizer), UPEI, $\$20,000$ per year for two years (awarded April 2015).
- StFX University Research/Publication/Teaching Award (awarded June 2015)
- StFX University Research/Publication/Teaching Award (awarded June 2013)
- StFX University Research/Publication/Teaching Award (awarded June 2012)
- StFX University Research/Publication/Teaching Award (awarded June 2011)
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- StFX University Research/Publication/Teaching Award (awarded June 2008)
- StFX University Research/Publication/Teaching Award (awarded June 2007)
- NSERC Discovery Grant, for "Fractal trees, topology and geometry: analysis and applications", $\$8,000$ per year for five years (awarded March 2007)
- StFX University Committee on Research (UCR) grant for summer research student in the amount of $\$2,200$ (awarded April 2006)

Other Grants

- Antigonight grant for "Making Art, Doing Math/Computer Science" project, (I was principal applicant, Eva Knoll was co-applicant), $900 for artists' fees for one event (September 7, 2018)
- NSERC PromoScience grant for "Show Me Your Math: Connecting Math to Our Lives and Communities Outreach Program", $\$37,500$ per year starting in the academic year 2017/2018, awarded January 2018 (Principal Applicant was Lisa Lunney Borden of the Department of Education at StFX, I am a co-organizer and consultant)
- StFX Service Learning Faculty Development and Research Support Fund grant in the amount of $500 to provide supplies for Pi Day (awarded December 2007)
- StFX Service Learning Faculty Development and Research Support Fund travel grant in the amount of $812.28 to participate in the Working Group on Outreach in Mathematics at the Canadian Mathematics Education Study Group annual meeting in Fredericton, New Brunswick, in June 2007 (awarded May 2007)
- StFX Service Learning Faculty Development and Research Support Fund travel grant in the amount of $937.54 to present a talk at the Mathematics Education session of the Canadian Mathematical Society Winter Meeting in Toronto, Ontario, in December 2006 (awarded November 2006)
- StFX Service Learning Faculty Development and Research Support Fund travel grant in the amount of $504.40 to present a talk at the Atlantic Community Math Network Conference at Acadia University in Wolfville, Nova Scotia, November 2006 (awarded November 2006)
- StFX Service Learning Faculty Development and Research Support Fund Grant for "Math in the Community" (awarded June 2006)

Grant Applications Submitted

- Co-Applicant for SSHRC Insight Grants, project title "Mathematics in Jacquard and Dobby Weaving", with Eva Knoll (principal investigator) and Wendy Landry (co-applicant), submitted October 2013. The application was not funded.
- Co-Applicant for SSHRC Insight Grants, project title "Mathematical Thinking as Exemplified in Textiles Arts", with Eva Knoll (principal investigator) and Wendy Landry (co-applicant), submitted October 2012. The application was awarded 4A status (worthy of funding but not enough funds).

- Principal User for the Canadian Foundation for Innovation New Initiatives Fund, project title "Centre for Interdisciplinary Research in Science and Mathematics Education", a collaborative proposal between Mount Saint Vincent University (MSVU) and St. Francis Xavier University, with Anthony Davis of MSVU as the designated project leader, submitted October 2008. The proposal was not successful, but the team plans to continue collaboration and to re-submit a proposal at a later date.

Teaching at StFX

- Math 100 (Mathematical Concepts): 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2011/2012, 2013/2014, 2014/2015
- Math 101 (Mathematical Concepts I): Fall 2017
- Math 102 (Mathematical Concepts II): Winter 2016, Fall 2016, Fall 2017, Fall 2018, Winter 2019, Fall 2019, Winter 2020, Fall 2020, Winter 2021, Fall 2021, Winter 2022, Fall 2022, Winter 2023, Fall 2023
- Math 106/107 (Differential/Integral Calculus): Fall/Winter 2022/2023
- Math 111/112 (Differential/Integral Calculus): Fall/Winter 2004/2005, 2011/2012, 2012/2013, 2013
- Math 126 (Differential Calculus): Fall 2016
- Math 205 (Business Mathematics): Fall 2004, Winter 2005, Spring 2005, Fall 2008
- Math 253 (Matrix Algebra): Fall 2015, Fall 2017, Fall 2018, Fall 2019
- Math 254 (Linear Algebra): Winter 2006, Winter 2007, Winter 2008, Winter 2009, Winter 2014, Winter 2015, Winter 2019, Winter 2020
- Math 354 (Modern Algebra I): Winter 2012, Fall 2012, Winter 2014, Fall 2014, Fall 2020, Fall 2021
- Math 366 (Real Analysis I): Fall 2005, Fall 2006, Fall 2007, Fall 2021, Fall 2023
- Math 371 (Modern Geometries): Winter 2006, Winter 2007, Winter 2008, Winter 2009, Winter 2013, Fall 2014, Fall 2016, Fall 2018, Winter 2021, Winter 2023
- Math 372 (Theory of Numbers): Fall 2019
- Math 454 (Modern Algebra II): Winter 2013, Winter 2015, Winter 2021
- Math 466 (Real Analysis II): Winter 2008, Winter 2009, Winter 2022
- Stat 201 (Elementary Statistics): Fall 2004, Winter 2004, Winter 2016
- EDUC 403 (Pedagogical Foundations for Elementary Mathematics Education III: Geometric Reasoning): Summer 2013, Summer 2014, Summer 2016

Student Supervision at StFX

1. Shelby Rouse, "Sierpinski Relatives and Labyrinth Fractals", summer research student, May 2020-August 2020 and May 2021-August 2021. Shelby graduated with her BSc in 2022 and started her BEd at StFX in Fall 2022.

2. Sean Rowley, "Convex Hulls of Sierpinski Relatives", summer research student, May 2016-August 2016. Sean is in a graduate program at Dalhousie University.

3. Corbin Hudson, "A Study of the Sierpinski Relatives", summer research student, May 2009-August 2009. Corbin went on to do graduate work at the University of Toronto in financial math and is currently employed by a financial institution in Halifax.

4. Allie Anderson, "A Study of the Sierpinski Relatives", summer research student, May 2009-August 2009. Allie went on to the Dentistry program at Dalhousie University.

5. Brandon Nunn, "The Twin Prime Conjecture", advanced major project, September 2007-April 2008. Brandon graduated with a Bachelor of Education (specializing in high school mathematics) from StFX in May 2010.

6. Alicia Mills (co-supervisor with Wendy MacCaull), "Logic and the Cantor Set", summer research and honours thesis, May 2006-April 2007. Alicia graduated with a Bachelor of Education (specializing in high school mathematics) from StFX in May 2009 and is now teaching in Nova Scotia.

7. Hilary Sedgwick, "Fractal Tilings", honours thesis, September 2006-April 2007. Hilary went on to the Bachelor of Education program at the University of Manitoba.

8. Nicole Wadden, "Convergence Properties of Approximations to the Golden Ratio", honours thesis, September 2006-April 2007. Nicole graduated with a Bachelor of Education (specializing in high school mathematics) from the University of Prince Edward Island in May 2009.

9. Maxx Hartt, "Knot Theory", honours thesis, September 2006-April 2007. Maxx completed a Ph.D. from the School of Planning from the University of Waterloo in 2016 and a Postdoc in the Department of Geography and Planning at the University of Toronto in 2017. He is now Associate Professor at Queen's.

10. Cheryl Latimer (now Malcolm), research assistant for service learning project (Bringing Math to the Community in Math 100), July 2006-April 2007. Cheryl graduated with a Bachelor of Education (specializing in high school mathematics) from StFX in May 2009 and is now teaching at StFX in the BEd program.

11. Ashley Buchanan, "The Golden Ratio", advanced majors project, September 2005-April 2006. Ashley received her Bachelor of Education from StFX in May 2008 and is now teaching in Nova Scotia.

12. Meghan MacDougall, "Nova Scotia's Math Curriculum" advanced majors project, September 2005-April 2006.

Research and Teaching Experience (Prior to StFX)

- Instructor at Dalhousie University, Math 1000 (First Year Calculus), Summer 2003, Winter 2002 and Fall 2001
- Instructor at Dalhousie University, Math/CSCI 2112 (Discrete Structures), Summer 2002
- Teaching assistant and marker, Dalhousie University, September 1999 to present
- Research assistant to Dr. William Martin (algebraic graph theory), University of Winnipeg, May 1998 to August 1998
- Teaching assistant and marker, University of Winnipeg, May 1994 to April 1996
- Tutor in mathematics and physics, 1994-2005

Professional Meetings

Research

1. Bridges Halifax conference on Mathematics, Art, Music, Architecture, Education, Culture, Halifax, Nova Scotia, July 2023 (presented paper)
2. Bridges Stockholm conference on Mathematics, Art, Music, Architecture, Education, Culture, Stockholm, Sweden, July 2018 (presented paper and co-organized workshop)
3. Atlantic General Relativity 2018 Workshop and Conference, St. Francis Xavier University, Antigonish, NS, June 2018
4. Bridges Waterloo conference on Mathematics, Art, Music, Architecture, Education, Culture, Waterloo, ON, July 2017 (ran workshop with Eva Knoll, Wendy Landry, and Paul Carreiro)
5. Iterated Function Systems (IFS), Fractals, Invariant Measures and Applications Conference, Dalhousie University, Halifax, NS, June 2016 (was co-organizer with Shafiqul Islam and Franklin Mendivil)
6. Science Atlantic Mathematics conference, Acadia University, Wolfville, NS, October 2015 (Co-organizer and presenter at workshop "Exploring Fractals: Topology, Dimension and Invariant Measures")
7. Bridges Baltimore conference on Mathematics, Music, Art, Architecture and Culture, Baltimore, MD, July 2015 (ran workshop with Eva Knoll, Wendy Landry and Susan Gerofsky)
8. CMS (Canadian Mathematical Society) Summer Meeting, Charlottetown, PEI, June 2015
9. Joint Meetings of the American Mathematical Society, Baltimore, MD, January 2014 (presented three talks)
10. Bridges Enschede conference on Mathematics, Music, Art, Architecture and Culture, Enschede, The Netherlands, July 2013 (ran workshop with Eva Knoll)

11. CMS Summer Meeting, Halifax, NS, June 2013 (co-organized session "Analysis, Geometry and Topology on Fractals, Wavelets and Self-similar Tilings", gave talk and attended committee meeting)
12. CMS Winter Meeting, Montreal, QC, December 2013 (attended committee meetings)
13. CMS Winter Meeting, Toronto, ON, December 2011
14. CMS Summer Meeting, Edmonton, AB, June 2011 (gave talk)
15. AMS/MAA (American Mathematical Society/Mathematical Association of America) Joint meeting, New Orleans, LA, January 2011 (gave talk)
16. Workshop of Geometry and Analysis, Louisiana State University, Baton Rouge, LA, January 2011 (gave talk)
17. APICS Mathematics, Statistics and Computer Science Conference, Saint Mary's University, Halifax, NS, October 2010 (judged student papers)
18. CMS Summer Meeting, Fredericton, NB, June 2010
19. Bridges Banff conference on Mathematics, Music, Art, Architecture and Culture, Banff, AB, July 2009 (ran workshop with Eva Knoll)
20. APICS (Atlantic Provinces Council on the Sciences) Conference/AARMS (Atlantic Association for Research in the Mathematical Sciences) Session, Université de Moncton, Moncton, NB, October 2008 (gave talk)
21. WCNA 2008 (World Congress of Nonlinear Analysts), sponsored by the International Federation of Nonlinear Analysts, Orlando, FL, July 2008 (gave talk)
22. Euler Symposium, Dalhousie University, Halifax, NS, October 2007
23. APICS Conference, UNBF, Fredericton, NB, October 2007
24. Bridges Donostia conference on Mathematical Connections in Art, Music and Science, Donostia/San Sebastian, Spain, July 2007 (presented refereed paper)
25. Convex and Fractal Geometry conference, Będlewo, Poland, May 2007 (presented paper)
26. The Second AARMS/Dalhousie Atlantic Analysis Days, Dalhousie University, Halifax, Nova Scotia, March 2007
27. AMS/MAA (American Mathematical Society/Mathematical Association of America) Joint meeting, New Orleans, LA, January 2007 (gave talk)
28. CMS Winter Meeting, Toronto, ON, December 2006 (gave talk)
29. CWiMAC (Connecting Women In Mathematics Across Canada) Workshop, Toronto, Ontario, December 2006 (acted as mentor)
30. APICS Mathematics, Statistics and Computer Science Conference, Cape Breton University, Sydney, NS, October 2006 (supervised student presentation)
31. Fractal 2006: Complexity and Fractals in Nature, 9th International Multidisciplinary Conference, Vienna, Austria, February 2006 (gave talk)

32. AARMS/Dalhousie Atlantic Analysis Days, Dalhousie University, Halifax, NS, January 2006
33. APICS Conference, Acadia University, Wolfville, NS, October 2005
34. CMS Summer Meeting, University of Waterloo, Waterloo, ON, June 2005 (gave talk)
35. CMS Summer Meeting, Dalhousie University, Halifax, NS, June 2004 (presented poster)
36. 15th Canadian Conference on Computational Geometry, Dalhousie University, Halifax, NS, August 2003
37. CMS Summer Meeting, University of Alberta, Edmonton, AB, June 2003
38. Connecting Women In Mathematics Across Canada Workshop (CWiMAC), University of Alberta, Edmonton, AB, June 2003 (gave talk)
39. MedMath 2003 (Fractals, Networks and Power Laws: Their Importance for Medicine & Its Allied Sciences), University of Manitoba, Winnipeg, MB, May 2003
40. Category Theory and Computer Science CTCS'02, University of Ottawa, Ottawa, ON, August 2002
41. CMS Summer Meeting, Laval University, Laval, QC, June 2002
42. 19th Annual Workshop in Geometric Topology, Calvin College, Grand Rapids, MI, June 2002

Teaching, Service and Math Education

1. Calculus Instruction in Atlantic Canada Conference, Virtual Meeting, May 2023 (co-organizer)
2. Canadian Mathematical Society (CMS) Winter meeting, online, December 2021 (gave presentation in Education session)
3. Canadian Mathematical Education Study Group (CMESG) annual meeting, virtual, June 2021 (co-organized Working Group on Mathematics and Mathematics Education Research Collaborations)
4. Canadian Mathematical Education Study Group (CMESG) annual meeting, StFX University Antigonish, May 2019 (participated in Working Group on Elementary Education)
5. Calculus Instruction in Atlantic Canada Conference, Mount Saint Vincent University, Halifax, NS, May 2019 (co-organizer)
6. Calculus Instruction in Atlantic Canada Conference, Acadia University, Wolfville, NS, May 2018 (co-organizer)
7. Canadian Mathematical Society (CMS) Summer meeting, Winnipeg, June 2014 (gave presentation in session Innovation and Outreach in Mathematics Education)
8. Canadian Mathematical Education Study Group (CMESG) annual meeting, Laval University Quebec, May 2012 (participated in Working Group on Numeracy)

9. Canadian Mathematical Society Winter Meeting, Toronto, Ontario, December 2011 (participated in meeting of the Education Committee)
10. Canadian Mathematical Society Summer Meeting, Edmonton, Alberta, June 2011 ((participated in meeting of the Education Committee)
11. Canadian Mathematical Education Study Group annual meeting, Memorial University, St. John's, Newfoundland, June 2011 (Co-supervised Working Group "Making Art, Doing Math")
12. Department of Education Mathematics Curriculum Revision Meeting, Dartmouth, Nova Scotia, September 2009 (worked on updating mathematics curriculum)
13. Department of Education Mathematics Curriculum Revision Meeting, Halifax, Nova Scotia, June 2009 (worked on updating mathematics curriculum)
14. Dalhousie Conference on University Teaching and Learning "Fostering Student Engagement", Halifax, Nova Scotia, April 2009
15. Premier's Forum on Student Achievement, Halifax, Nova Scotia, November 2007
16. Canadian Mathematical Education Study Group (CMESG) annual meeting, Fredericton, New Brunswick, June 2007 (participated in Working Group on Outreach in Mathematics)
17. Dalhousie Conference on University Learning and Teaching "Engaging Students as Writers and Thinkers", Halifax, Nova Scotia, May 2007
18. Atlantic Community Math Network Conference, Acadia University, Wolfville, Nova Scotia, November 2006 (gave talk)
19. Dalhousie Conference on University Learning and Teaching "Involving Students in Their Own Learning", Halifax, Nova Scotia, May 2004
20. Dalhousie Conference on University Teaching and Learning "Preserving and Adapting Core Values in the Contemporary University", Halifax, Nova Scotia, May 2003
21. Dalhousie Conference on University Teaching and Learning "Pedagogy First: Supporting Learning and Teaching with Technology", Halifax, Nova Scotia, May 2002

Talks/Posters/Presentations

Research

1. "Using Triangle Sierpinski Relatives to Visualize Subgroups of the Symmetries of the Squares", talk at Bridges Halifax 2023 Math and Art Conference, Halifax, Nova Scotia, July 2023.
2. "The Beauty of the Sierpiński Relatives", talk at Bridges Stockholm 2018 Math and Art Conference, Stockholm, Sweden, July 2018

3. "Experiencing Group Structure: Observing, Creating and Performing the Plain Hunt 4 via Music, Poetry, Visual and Culinary Arts", workshop with Susan Gerofsky, Eva Knoll and Avalon Campbell-Cousins, Bridges Stockholm 2018 Math and Art Conference, Stockholm, Sweden, July 2018
4. "Symmetric Sierpinski Relatives: Using Their Convex Hulls to Generate More Fractals, Tilings and Frieze Patterns", StFX Faculty Research Day, February 2018
5. "The Aesthetics of Colour in Mathematical Diagramming" workshop with members of MathWeave, Bridges Waterloo 2017 Math and Art Conference, Waterloo, ON, July 2017
6. "Multinacci Numbers, Golden Gaskets and Fractal Trees" talk presented to StFX, and broadcast live to Acadia and UPEI, November 2015
7. "The Aesthetics of Scale: Weaving Mathematical Understandings" workshop with members of MathWeave, Bridges Baltimore 2015 Conference on Mathematics, Music, Art, Architecture, Culture, Baltimore, MD, July 2015
8. "Totally Disconnected Sierpiński Relatives", Mathematics of Fractals and Related Topics Special AMS Session, Joint Meetings of the AMS/MAA, Baltimore, January 2014
9. "Totally Disconnected Sierpiński Relatives", Fractal Geometry, Complex Dynamics, and Dynamical Systems AMS Session, Joint Meetings of the AMS/MAA, Baltimore, January 2014
10. "Visualizing Concepts from Modern Algebra Using Variations of Generalized Woven Figure Eights", Mathematics and Mathematics Education in Fiber Arts Special AMS Session, Joint Meetings of the AMS/MAA, Baltimore, January 2014
11. "Totally Disconnected Sierpiński Relatives", Analysis, Geometry and Topology on Fractals, Wavelets and Self-similar Tilings Session, CMS Summer Meeting, Halifax, June 2013
12. "Mathematics and Textiles" (with Eva Knoll and Wendy Landry), Cross Campus Conversations, Mount Saint Vincent University, October 2012
13. "Using Binary Cantor Sets to Study the Connectivity of Sierpiński Relatives", Contributed Papers Session of the CMS Summer Meeting, Edmonton, June 2011
14. "Using Cantor Sets to Study the Connectivity of Sierpiński Relatives", AMS Session on Geometry, Joint Meetings of the AMS/MAA, New Orleans, January 2011
15. "Using Cantor Sets to Study the Connectivity of Sierpiński Relatives", Workshop in Analysis and Geometry, LSU, Baton Rouge, January 2011
16. "Exploring Some of the Mathematical Properties of Chains" (workshop with Eva Knoll of Mount Saint Vincent University), Bridges Banff conference on Mathematics, Music, Art, Architecture and Culture, Banff, Alberta, July 2009
17. "Topological Barcodes and Complexity of Fractals", AARMS (Atlantic Association for Research in the Mathematical Sciences) Colloquia, APICS (Atlantic Provinces Council on the Sciences) Mathematics, Statistics and Computer Science Conference, Université de Moncton, Moncton, New Brunswick, October 2008

18. "Topological Barcodes and Complexity of Fractals", WCNA 2008 (Fifth World Congress of Nonlinear Analysts), Orlando, Florida, July 2008

19. "Golden Fractal Trees", Bridges Donostia conference on Mathematical Connections in Art, Music and Science, Donostia/San Sebastian, Spain, July 2007

20. "Topological Bar-codes of Fractals", Convex and Fractal Geometry conference, Będlewo, Poland, May 2007

21. "Finding Gold In The Forest: Fractal Trees and the Golden Ratio", Chaos and Fractals Session of the joint AMS/MAA (American Mathematical Society/Mathematical Association of America) national meeting, New Orleans, January 2007

22. "Fractals and the Golden Ratio", Honours Math Seminar, Acadia University, Wolfville, Nova Scotia, March 2006

23. "New Characterizations and Classifications of Fractal Trees Using Methods of Computational Topology", Fractal 2006, Vienna, Austria, February 2006

24. "Finding Gold In The Forest: Fractal Trees and the Golden Ratio", invited talk at the Discrete and Computational Geometry Session of the CMS (Canadian Mathematical Society) Summer meeting, University of Waterloo, June 2005

25. "Computational Topology and Fractal Trees", Poster Session at the CMS Summer Meeting, Dalhousie University, Halifax, Nova Scotia, June 2004

26. "Butterflies and Mathematics", Dalhousie Honours Math Seminar, Dalhousie University, Halifax, Nova Scotia, November 2003

27. "Fractal Trees: Some Topological Aspects and Some Applications", CWiMAC (Connecting Women in Mathematics Across Canada) workshop, University of Alberta, Edmonton, Alberta, June 2003

28. "Fractals in Nature", Dalhousie Honours Math Seminar, Dalhousie University, Halifax, Nova Scotia, February 2003

29. "An Introduction to the Axiom of Choice", Dalhousie Graduate Student Seminar, Dalhousie University, Halifax, Nova Scotia, January 2003

Teaching, Service and Math Education

1. "Fun with Fractals", virtual class visits through the Fields Institute Ask A Mathematician program (2021-present)
2. "Fibonacci Sequence and Spirals", virtual class visits through the Fields Institute Ask A Mathematician program (2021-present)
3. "Helping Students Connect Math to Their Own Lives", presentation in the session "Emphasizing communication in mathematical practice" at the Winter meeting of the Canadian Mathematical Society, December 2021 (online).
4. "Fun with Fractals", talk at the StFX Math Camp, May 2019
5. "Making Art, Doing Math/Computer Science", presentation with hands-on activities for the public, with Eva Knoll and students from StFX, Antigonight, Antigonish, September 2018
6. "Surprising Connections in Math: From the Golden Ratio to Fractals", talk at the StFX Math Camp, May 2018
7. "Do you Colour? Mathematicians Sure Do", presentation with hands-on activities at the WISE (Women in Science and Engineering) Summer Science Camp for girls, Mount Saint Vincent University, July 2017
8. "Surprising Connections in Math: From the Golden Ratio to Fractals", talk at the StFX Math Camp, May 2017
9. "Making with Rigour: Integrating Math and Art" workshop at the Teach Today for Tomorrow IT Summer Camp for Nova Scotia teachers, with other members of MathWeave, Mount Saint Vincent University, Halifax, August 2016
10. "Surprising Connections in Math: From the Golden Ratio to Fractals", talk at the StFX Math Camp, May 2016
11. "Surprising Connections in Math: From the Golden Ratio to Fractals", talk at the StFX Math Camp, May 2015
12. "Weaving Understanding of Patterning and Algebra" with Eva Knoll and Paul Carrerio, presentation at the Nova Scotia Department of Education Mathematics Teachers' Association meeting, Halifax, October 2014
13. "Mathematical Variations on Woven Figure Eights", Innovation and Outreach in Mathematics Education Session, Canadian Mathematical Society Summer meeting, Winnipeg, June 2014
14. "Surprising Connections in Math: From the Golden Ratio to Fractals", talk at the StFX Math Camp, May 2014
15. Role Model at Girls Get WISE Science Retreat, Mount Saint Vincent University, May 2014
16. Techsploration presentation on math, Dr. J.H. Gillis High School, Antigonish, Nova Scotia, April 2014

17. Math presentation with Dr. Stephen Finbow, Canso Academy, Canso, Nova Scotia, May 2013
18. "Making Art, Doing Math", Working Group at the CMESG annual meeting (co-supervised with Eva Knoll), Memorial, St. John's, June 2011
19. Gave opening remarks at Techsploration launch, Art Gallery of Nova Scotia, December 2009
20. Techsploration presentation on math, Strait Area Education and Recreation Centre, Port Hawkesbury, Nova Scotia, April 2009
21. Presenter at the StFX Colloquium "Connecting Service and Learning: Challenges, Rewards and Results", St. Francis Xavier University, Antigonish, Nova Scotia, February 2008
22. Panelist at the "Professors' Panel on Writing", hosted by the Writing Centre, St. Francis Xavier University, Antigonish, Nova Scotia, January 2008
23. Presentation on math and art at Dr. John Hugh Gillis High School, Antigonish, Nova Scotia, October 2007
24. "Fractals, the CN Tower and Pine Cones: How are they connected?", Community Science Centre Association talk for high school students, St. Francis Xavier University, Antigonish, Nova Scotia, May 2007
25. Presenter at the StFX Colloquium "Connecting Service and Learning: Strategies and Challenges from Multiple Perspectives", St. Francis Xavier University, Antigonish, Nova Scotia, April 2007
26. Techsploration presentation on math, with Lisa Lunney (from StFX Education Department), to grade 9 students at Dr. John Hugh Gillis High School, Antigonish, Nova Scotia, April 2007
27. "Math and Service Learning: Bringing Math to the Community", invited talk at the Mathematics Education session of the CMS (Canadian Mathematical Society) Winter meeting, Toronto, December 2006
28. "Math and Service Learning: Bringing Math to the Community in the course MATH 100 (Mathematical Concepts)", Atlantic Community Math Network Conference, Acadia University, Wolfville, Nova Scotia, November 2006
29. Techsploration presentation on math, Guysborough Academy, Guysborough, Nova Scotia, April 2006
30. Techsploration presentation on math, Canso Academy, Canso, Nova Scotia, April 2006
31. Techsploration presentation on math, Dr. John Hugh Gillis High School, Antigonish, Nova Scotia, April 2005

Other Academic/Professional/Service Activities

At St. Francis Xavier University:

1. Member of the Joint StFX/StFXAUT Gender Pay Equity Committee (September 2021-present)
2. Member of the Faculty of Science Dean Search Committee (June 2021-January 2022)
3. Member of the StFX Rank and Tenure Committee (September 2020-April 2022)
4. Member of the StFX Committee on Reconciliation (Academic Program Circle) (February 2019-August 2020)
5. Member of the StFX Committee on Research Integrity (September 2018-present)
6. Member of the StFXAUT Contract and Benefits Committee (April 2018-April 2022)
7. Participant at the John Jerome Paul Chair for Equity in Mathematics Education Steering Committee Meeting (April 2018)
8. Member representing the StFXAUT on the StFX Daycare Review Committee (March 2018)
9. Chair of the Departmental Evaluation Committee for review of candidate seeking promotion to full professor, Department of Mathematics, Statistics and Computer Science (Fall 2017)
10. Co-organizer (with Angie Kolen) of the second annual StFX Fall Faculty Teaching Retreat "Teaching Today's Student" (August 2016)
11. Mental Health First Aid Training (June 2016)
12. Co-organizer of StFX Math Camp (May 2016, 2017, 2018)
13. Reader at the "Freedom to Read" event at the Angus L. MacDonald Library (February 2016)
14. Co-organizer (with members of the Women's and Gender Studies Advising Faculty) of the "Educational Forum on Slut-shaming" (January 2016)
15. Co-organizer (with Angie Kolen) of the first annual StFX Fall Faculty Teaching Retreat "Teaching and Learning Spaces" (August 2015)
16. Co-organizer of "Connecting Math to Our Lives and Communities" program (math outreach program to Mi'kmaw and African Nova Scotian communities) supervised by Lisa Lunney Borden, Faculty of Education, StFX (July 2015-present)
17. Member of the Nicholson Classroom Renovations Steering Committee (April 2015-November 2016)
18. Adjudicator in the StFX Student Research Day (March 2015)
19. Member of StFX Women's and Gender Studies Advising Faculty (October 2014-June 2016)
20. Member of StFX Faculty Development Committee (September 2014-December 2016), Chair of FDC (April 2015-December 2016)
21. Secretary of the Department of Mathematics, Statistics and Computer Science (September 2014-April 2015)

22. Involved with the StFX Wonder Camp (July 2014)
23. Member of StFXAUT Committee on Nominations (April 2014-May 2016, was Chair from April 2015 to May 2016).
24. Adjudicator in the StFX Student Research Day (March 2014)
25. Departmental Library Liaison (September 2013-September 2016)
26. Member of the StFX Chairs Selection Committee (April 2013-April 2015)
27. Adjudicator in the StFX Student Research Day (March 2013)
28. Adjudicator in the StFX Student Research Day (March 2012)
29. Member of the StFX Honourary Degrees Committee (September 2011-April 2014)
30. Adjudicator in the StFX Student Research Day (March 2009)
31. Organizer and Mentor (together with Wendy MacCaull, Man Lin and Ping Zhou from the StFX Department of Mathematics, Statistics and Computer Science) for a Techsploration group of six female grade nine students from the Strait Area Education and Recreation Centre.
32. Chair of the StFX Senate Committee on Quality of Life (October 2008-September 2009)
33. Adjudicator in the StFX Student Research Day (March 2008)
34. Participant in the "Faculty and Student Forum on Mental Health" at St. Francis Xavier University (March 2008)
35. Editor of the St. Francis Xavier Association of University Teachers (StFXAUT) Newsletter (November 2007-April 2008)
36. Chair of the Mathematics Curriculum Committee of the Department of Mathematics, Statistics and Computer Science (2007-2009)
37. First year student advising at StFX (September 2007)
38. Member-at-large on the Executive of the StFXAUT (April 2007-April 2008)
39. Member of the Status of Women Committee of the StFXAUT (April 2007-April 2008)
40. Participant in StFX library faculty focus group (June 2007)
41. Member of the StFX Student Union Senior Awards Committee (April 2007)
42. Senator at StFX (September 2006-September 2009)
43. Secretary of the Department of Mathematics, Statistics and Computer Science (September 2006-April 2007)
44. Organizer of math activities at StFX summer academy and science camps, for ages 6-18 (summers 2006, 2007, and 2008)
45. Participant in StFXAUT sponsored workshop on equity (May 2006)

46. Member of the Scholarships and Bursaries Committee at StFX (2005-2007)
47. Library representative for the Department of Mathematics, Statistics and Computer Science at StFX (2005-2009, 2013-2016)

Outside of StFX

1. Member of the EDI committee of the Atlantic Association for Research in the Mathematical Sciences (AARMS) (September 2023-present)
2. Member of the Board of the Atlantic Association for Research in the Mathematical Sciences (AARMS) (October 2021-present)
3. External Examiner for Master of Science thesis "An Investigation of Local Zeta Functions of Self-similar Fractal Strings" by David Samuel, Acadia University (December 2021)
4. Presenter through the Fields Institute Ask A Mathematician program (September 2021-present)
5. Member of the local organizing committee for the Bridges Math and Art Conference to be held in Halifax, July 2023 (2020-present)
6. Co-presenter (with other members of MathWeave) at "All SySTEMS Go" Girl Guide Science Camp at Dalhousie University, Halifax, NS (May 2019)
7. Presenter at the Antigonish Education Centre Career Day, Antigonish, NS (May 2019)
8. Presenter at "Girls get WISE" Science Retreat, StFX University, Halifax, NS (March 2019)
9. Member of Bridges Math and Art Conference Program Committee (2019-present)
10. Co-presenter (with other members of MathWeave) at "Girls Get WISE" Science Camp at Mount Saint Vincent University, Halifax, NS (July 2017)
11. Conference co-organizer (with Franklin Mendivil and Shafiqul Islam) for "Iterated Function Systems (IFS), Fractals, Invariant Measures and Applications Conference", Dalhousie University in Halifax (June 2016)
12. Co-organizer (with Franklin Mendivil and Shafiqul Islam) of the Workshop "Exploring Fractals: Topology, Dimension and Invariant Measures" at the Science Atlantic Mathematics conference Acadia University, Wolfville (October 2015)
13. Participant at the Atlantic Association for Research in the Mathematical Sciences (AARMS) Leadership Retreat, Dalhousie University, Halifax, NS (March 2016)
14. Managing editor for North and South America for *Fractals* (December 2014-present)
15. Member of the Atlantic Association for Research in the Mathematical Sciences (AARMS) Math Outreach and Education group (June 2014-present, attended meetings June 2014, 2015, 2016 and 2017)
16. Presenter at "Girls get WISE Science Retreat", Mount Saint Vincent University, Halifax, NS (May 2014)

17. Principal Organizer for conference session "Analysis, Geometry and Topology on Fractals, Wavelets and Self-similar Tilings" (with co-organizers Franklin Mendivil and Eva Curry), CMS Summer Meeting (June 2013)
18. Judge of student talks at the APICS conference (October 2010)
19. External Examiner for the Master of Science thesis "Topological Properties of Tiles and Digit Sets" by Avra Laarakker, Department of Mathematics and Statistics, Acadia University, Wolfville, Nova Scotia (June 2009)
20. Reviewer for papers for various journals and organizations: *American Mathematical Society*, *Fractals*, *American Mathematical Monthly*, *Journal of Mathematical Analysis and Applications*, it Indiana University Mathematics Journal, *Crux Mathematicorum*, *Atlantic Electronic Journal of Mathematics*, 2009-present
21. Member of the steering committee for the Mathematics Curriculum Revision of the Nova Scotia Department of Education (December 2008-September 2009)
22. Chair of the Antigonish Education Centre School Advisory Council (Fall 2007-June 2008)
23. Secretary for the Mathematics and Statistics Committee of the Atlantic Provinces Council on the Sciences (2007-2009)
24. Mentor for Techsploration (Spring 2005 to present). Techsploration helps Grade 9 girls in Nova Scotia from diverse backgrounds learn about careers in science, trades and technology.
25. Department liaison for the Mathematical Association of America (2005-present)
26. APICS Mathematics and Statistics council representative for StFX (Fall 2005-Spring 2009)
27. Member of the local organizing committee for the CMS Summer Meeting (June 2004)
28. President of the Dalhousie Mathematics and Statistics Graduate Students' Association (September 2002-June 2004)
29. Vice-President of the Dalhousie Mathematics and Statistics Graduate Students' Association (September 2001-August 2002)
30. Council Member of the Dalhousie Association of Graduate Students (September 2001-August 2003)
31. Member of the Dalhousie Math/Stats Education Study Group (2001-2005)

Memberships

- Canadian Mathematical Society
- American Mathematical Society
- Mathematical Association of America
- Canadian Mathematics Education Study Group
- Association for Women in Mathematics

Academic Awards

- Honourable Mention at the Canadian Mathematical Society Summer Meeting 2004 Poster Session
- Killam Predoctoral Scholarship, Dalhousie University (September 2003-August 2004)
- Honourary Killam Predoctoral Scholarship, Dalhousie University (September 2002-August 2003)
- NSERC PGS B (September 2001-August 2003)
- NSERC PGS A (September 1999-August 2001)
- Chancellor's Gold Medal for highest standing in science, The University of Winnipeg (June 1996)
- Canada Scholarship (September 1992-April 1996)
- Dr. Arnold Rogers Scholarship (Mathematics) (October 1995)
- NSERC Undergraduate Summer Research Award (May 1995)
- S.K. Sen Scholarship in Physics (October 1994)

Personal

I love doing, teaching, learning and sharing mathematics, but I have many other interests. I am motivated by the desire to learn and to share knowledge with others. I love languages and literature, I have studied French, Italian, Spanish, Latin and Ancient Greek. Following my undergraduate degree, I took a break from academic life for a few years. I first travelled to Ireland for a year and worked on organic farms. Upon returning to Canada, I worked at a group home for mentally handicapped adults. I am interested in issues related to women in mathematics and women's issues in general, and I also believe it is important to be active in my community.

References

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