Evelyne Smith-Roberge

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CURRENT POSITION	Visiting Assistant Professor Georgia Institute of Technology, School of Mathematics	2022-2025
EDUCATION	PhD: Combinatorics and Optimization Supervisor: Luke Postle Thesis title: Local Perspectives on Planar Colouring University of Waterloo, Waterloo, Ontario	August 2022
	Master of Mathematics: Combinatorics and Optimization Supervisor: Luke Postle Thesis title: Density and Structure of Homomorphism-Crit University of Waterloo, Waterloo, Ontario	August 2018 ical Graphs
	Bachelor of Science (Major: Mathematics) McGill University, Montreal, Quebec	May 2016
COURSES TAUGHT/TAd	InstructorGeorgia Institute of Technology, School of Mathematics• MATH 4022: Introduction to Graph Theory• MATH 3012: Applied CombinatoricsFal	Fall 2023 & 2024 l 2022, Spring 2023 & 2024
	University of Waterloo, Faculty of Mathematics • MATH 239: Introduction to Combinatorics	Fall 2021
	 Teaching Assistant University of Waterloo, Faculty of Mathematics MATH 239: Introduction to Combinatorics CO 687: Applied Cryptography MATH 674: Special Topics in Mathematical Connection MATH 342: Introduction to Graph Theory MATH 104: Introductory Calculus for Arts and Social S ECE 103: Discrete Mathematics MATH 116: Calculus 1 for Engineering 	six terms, 2017-2021 one term, 2021 ns one term, 2020 two terms, 2019-2020 Science one term, 2018 one term, 2017 one term, 2016
PAST EMPLOYMENT	 Cryptography Intern Communications Security Establishment, Government of Ca At the end of this internship, wrote a final report restrict 	Summer 2020 mada ted to internal distribution.
	 Part-time Mechanical Engineering Intern Siemens Canada, Energy Sector Continued work started at Rolls-Royce and the Harvard Applied Science, designing zero-porosity auxetic struct hot-section components. 	2014-2015 d School of Engineering and tures for use in gas turbine
	Visiting Research Scholar	Summer 2014

Harvard School of Engineering and Applied Science

• Studied macroscopic material instability and its application in the design of new metamaterials. Using Python, Abaqus, and Matlab, designed, modeled and optimized a structure with tunable Poisson ratio for use in the aerospace industry.

Part-time Mechanical Engineering Intern

2013-2014

Research and Technology, Energy Sector, Rolls-Royce Canada

- I and another student were the first ever undergraduate mathematics students to be hired as part of the engineering internship program.
- Employed optimization techniques to create a new tool for material and process selection.
- Using finite element analysis, studied buckling-induced pattern transformation and its application to metallic aerospace structures.

PUBLICATIONS & PREPRINTS

- A. Bernshteyn, E. Lee, **E. Smith-Roberge**. Weak Degeneracy of Planar Graphs. Submitted, 2024.
- D. Cranston, E. Smith-Roberge. List-Packing and Correspondence-Packing of Planar Graphs. Submitted, 2024.
- L. Postle, E. Smith-Roberge. Exponentially Many Correspondence Colourings of Planar and Locally Planar Graphs. Submitted, 2023.
- S. Mies, B. Moore, and E. Smith-Roberge. Beyond the Pseudoforest Strong Nine Dragon Tree Theorem. Submitted, 2023.
- L. Postle, E. Smith-Roberge. Hyperbolicity Theorems for Correspondence Colouring. Submitted, 2023.
- E. Smith-Roberge. On the choosability with separation of planar graphs and its correspondence colouring analogue. 2022. (arXiv:2203.13348v2) (Note: will not be submitted for publication, as the result was superceded by another paper uploaded to arXiv a few days later.)
- L. Postle, **E. Smith-Roberge**. *Local Choosability of Planar Graphs*. Advances in Combinatorics, December 2022. (arXiv:2108.03315)
- B. Moore, **E. Smith-Roberge**. *A Density Bound for Triangle-free 4-Critical Graphs*. 2020. Journal of Graph Theory 103 (1), 66-111. (arXiv:2012.01503)
- L. Postle, **E. Smith-Roberge**. On the Density of C₇-Critical Graphs. 2022. Combinatorica 42(2), 253-300. (arXiv:1903.04453)
- F. Javid, E. Smith-Roberge, M. Innes, J. Weaver, A. Shanian, K. Bertoldi. *Dimpled elastic sheets: a new class of non-porous negative Poisson's ratio materials.* 2015. Scientific Reports 5, Article number: 18373. doi:10.1038/srep18373.

PRESENTATIONS Conferences

- Correspondence Packings of Planar Graphs. Presented at the Atlanta Lecture Series Combinatorics and Graph Theory XXVIII (ALS 28). March 2024
- Counting 5-Correspondence Colourings. Presented at AMS Special Session on Advances in Graph Theory and Combinatorics I.
- Counting 5-Correspondence Colourings of Planar Graphs. Presented at CanaDAM 2023. June 2023
- Counting Correspondence Colourings of Planar Graphs. Presented at AMS Special Session on Recent progress in Chromatic Graph Theory. April 2023.
- Unifying and localizing two planar list colouring results of Thomassen. Presented at the AWM Special Session on Women in Graph Theory at JMM 2023. January 2023.
- *Planar graphs are local girth choosable*. Presented at the CMS Summer Sessions 2022. June 2022.
- Local Choosability of Planar Graphs. Presented at CanaDAM 2021. May 2021.
- Density of C₇-Critical Graphs. Presented at Eurocomb 2019. August 2019.

• Density of C₇-Critical Graphs. Presented at the SIAM Conference in Discrete Mathematics. June 2018.

Seminars

- Correspondence Packings of Planar Graphs. Atlantic Graph Theory Seminars 2023-24, Dalhousie University. February 2024.
- Correspondence Packings of Planar Graphs. Discrete Math Seminar, University of Victoria. January 2024.
- Hyperbolicity and Counting Correspondence Colourings. Graph Theory Seminar, Georgia Tech. November 2023.
- Hyperbolicity and Counting Correspondence Colourings. Discrete Math Seminar, Illinois Tech. November 2023.
- Counting 5-correspondence colourings of planar graphs. Discrete Math and Combinatorics Seminar, University of South Carolina. March 2023.
- Local Choosability for Planar Graphs, Graph Theory Seminar, University of Amsterdam. November 2022.
- Unifying and localizing two planar list colouring results of Thomassen. Graph Theory Seminar, Georgia Tech. September 2022.
- Planar graphs are local girth choosable. Discrete Maths Seminar, University of Victoria. March 2022.
- A Local Choosability Theorem for Planar Graphs. Graphs and Matroids Seminar, University of Waterloo. September 2021.
- Density and Structure of Odd-Cycle-Critical Graphs. Graphs and Optimization Seminar, LaBRI, Bordeaux, France, November 2018.
- Density and Structure of Homomorphism-Critical Graphs. Graphs and Matroids Seminar. University of Waterloo. August 2018.
- Ramsey Theory: a Quick and Painless Introduction. Presented at the Seminars in Undergraduate Mathematics in Montreal. January 2016.

PATENTS Inventors: F. Javid, K. Bertoldi, M. Taylor, C. Booth-Morrison, C. Carlson, M. Farhangi, M. Gerendas, T. Gillespie, M. Innes, F. Jette, M. Q. Pham, F. Sanchez, T. Scarinci, M. Schaenzer, A. Shanian, E. Smith-Roberge, B. Villien.

- Hybrid dimple-and-void auxetic structures with engineered patterns for customized NPR behavior. WO 2016112367 A3. 2016.
- Zero-porosity NPR structure and tuning of NPR structure for particular localities. US 2018009257 A1. 2016.
- Negative Poisson's ratio waffle structures. WO 2016112366 A1. 2016.
- Multi-layer NPR structures. WO 2016112365 A1. 2016.
- Auxetic structures with distorted projection slots in engineered patterns to provide NPR behavior and improved stress performance. WO 2016112369 A1. 2016.
- Auxetic structures with angled slots in engineered patterns for customized NPR behavior and improved cooling performance. WO 2016112368 A1. 2016.

2020-2023

AWAILDS	University of waterioo
	• NSERC (CGSD-3) (\$105 000) (declined in last year)
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University of Weterlee

- fall 2020 • Outstanding TA Award (Departmental award) 2020-2021 President's Graduate Scholarship (\$ 10 000) • Mathematics Domestic Doctoral Scholarship (\$ 2 500) 2019-2020
- Math Provost Doctoral Entrance Award for Women (\$ 5 000) 2018-2019 2018-2019
- Mathematics Domestic Doctoral Scholarship (\$ 5 000)

REFEREE Journal of Combinatorial Theory, Series B (JCTB) SIAM Journal on Discrete Mathematics (SIDMA) European Journal of Combinatorics

- Discrete Mathematics
- Electronic Journal of Combinatorics

SERVICE & OUTREACH • Co-organizer of the Graph Theory and Combinatorics Seminars at Georgia Tech (Jan. 2024-present)

- **Co-organizer**, CanaDAM 2023 Contributed minisymposium titled *Flows*, *Colourings*, and *Decompositions* (June 2023)
- **Co-organizer**, Georgia Tech's High School Math Day 2023 and 2024: a day of mathematical exploration and competitions for high school students in the surrounding states. (Apr. 2023, Mar. 2024)
- **Co-organizer**, graduate student and postdoc poster session and lightning talk session. ACORN 2023, Georgia Institute of Technology. (Mar. 2023)
- Grad Student Representative for the U. of Waterloo's C&O Department. (Sept. 2020-Jan. 2022)
- C&O Director for the Maths Grad Student Association at the University of Waterloo. Represented the interests of the C&O grad students in the monthly MGSA meetings. (Sept. 2020-Aug. 2021)
- **Speaker for** *Math Circles*, a free weekly enrichment activity for grade 6 to 12 students organized by the Faculty of Mathematics of the U. of Waterloo. Presented various topics including continued fractions, introductory graph theory, introductory Ramsey theory, etc. (2016-2017)
- **VP Communications** for McGill's Society of Undergraduate Maths students (SUMS). (2015-2016)