

Dr. Michelle Delcourt

- CONTACT INFORMATION** Toronto Metropolitan University
(formerly Ryerson University) *Office:* ENG 215
Department of Mathematics *E-mail:* mdelcourt@ryerson.ca
350 Victoria St. *WWW:* people.ryerson.ca/mdelcour/
Toronto, Canada M5B 2K3
- EDUCATION** **University of Illinois at Urbana–Champaign**, Urbana, IL (USA)
Ph.D., Mathematics August 2011 – May 2017
• Thesis title: “*Viewing extremal and structural problems through a probabilistic lens*”
• Adviser: József Balogh
M.S., Mathematics December 2012
- Georgia Institute of Technology (Georgia Tech)**, Atlanta, GA (USA)
B.S., Discrete Mathematics August 2007 – May 2011
• Graduated with Highest Honor.
- EMPLOYMENT** **Toronto Metropolitan University (formerly Ryerson University)**, Toronto (Canada)
Assistant Professor (tenure-track), Department of Mathematics July 2019 – Present
University of Waterloo, Waterloo (Canada)
Adjunct Professor, Combinatorics and Optimization July 2019 – Present
University of Waterloo, Waterloo (Canada)
Research Assistant Professor, Combinatorics and Optimization Sept. 2018 – June 2019
University of Birmingham, Birmingham (United Kingdom)
Research Fellow, Mathematics September 2017 – August 2018
• Supervisor: Will Perkins
- GRANTS** American Institute of Mathematics
(OVER \$400,000 CAD)
• **SQuAREs (Structured Quartet Research Ensembles) Research Proposal** 2020–2023
Natural Sciences and Engineering Research Council of Canada
• **NSERC Discovery Grant in Computer Science (\$33,000 CAD a year, 5 years)** 2019–2024
• **NSERC Discovery Launch Supplement in Computer Science (\$12,500 CAD)** . 2019–2024
American Mathematical Society and Simons Foundation
• **AMS-Simons Travel Grant (\$4,000 USD)** 2018–2020
University of Birmingham, Birmingham (UK)
• **PERCAT Career Development Award** 2018
US National Science Foundation
• **Graduate Research Fellowship (\$130,000 USD)** 2011–2016
Mathematical Association of America
• **Dolciani Math Enrichment Grant (Co-author \$6,000 USD)** 2016
Oberwolfach (Germany)
• **US Junior Oberwolfach Fellowship** 2015
University of Illinois, Urbana, IL
• **2015 Public Engagement Grant (PI, \$8,000 USD)**, Office of Public Engagement 2014
• **2014 Public Engagement Grant (PI, \$6,500 USD)**, Office of Public Engagement 2013
• **UIUC REGS1 Summer Research Fellowship (\$4,500 USD)**, Department of Math 2012
• **UIUC REGS0 Summer Research Fellowship (\$4,000 USD)**, Department of Math 2011

AWARDS

University of Illinois, Urbana, IL

- **Graduate Student Leadership Award**, The Graduate College 2016
- **Graduate Teacher Certificate Award**, Center for Innovation in Teaching and Learning 2013

Georgia Tech, Atlanta, GA

- **Outstanding Undergraduate Researcher Award**, College of Sciences 2011
- **Exceptional Research and Service Award**, School of Mathematics 2011

JOURNAL

PUBLICATIONS

17. **Delcourt, M** and L. Postle. Finding an almost perfect matching in a hypergraph avoiding forbidden submatchings. *Submitted*. See arXiv:2204.08981 for latest version.
16. **Delcourt, M** and L. Postle. Reducing Linear Hadwiger's Conjecture to Coloring Small Graphs. *Submitted*. See arXiv:2108.01633 for latest version.
15. Bi, J, R. Davidson, **M. Delcourt**, R. Guzman, C. Monical, J.A. Sanchez, Y. Ren, and S. Zha. A combinatorial method for connecting BHV spaces representing different numbers of taxa. *Submitted*. See arXiv:1708.02626 for latest version.
14. **Delcourt, M**, G. Perarnau, and L. Postle. Rapid mixing of Glauber dynamics for colorings below Vigoda's $11/6$ threshold. *Submitted*. See arXiv:1804.04025 for latest version.
13. Bonamy, M, **M. Delcourt**, R. Lang, and L. Postle. Edge-colouring graphs with local list sizes. *Accepted with Revisions*. See arXiv:2007.14944 for latest version.
12. Balogh, J, **M. Delcourt**, E. Heath, and L. Li. Generalized Rainbow Turan Numbers of Odd Cycles. *Discrete Mathematics*, Vol 345, Issue 2, (2022).
11. Bernshteyn, A, **M. Delcourt**, and A. Tserunyan. Independent Sets in Algebraic Hypergraphs. *Journal of the European Mathematical Society*, Vol 24, No 1, (2021), 1–35.
10. **Delcourt, M** and L. Postle. Progress towards Nash-Williams' Conjecture on Triangle Decompositions. *J. Comb. Theory Ser. B*, Vol 146, (2021), 382–416.
9. **Delcourt, M**, M. Heinrich, and G. Perarnau. The Glauber dynamics for edges colourings of trees. *Random Structures and Algorithms*, Vol 57, Issue 4, (2020).
8. Bernshteyn, A, **M. Delcourt**, H. Towsner, and A. Tserunyan. A Nonalgorithmic Short Proof of the Containers Theorems for Hypergraphs. *Proceedings of the AMS*, Vol 147, No 4, (2019), 1739–1749.
7. **Delcourt, M** and L. Postle. Random 4-regular graphs have 3-star-decompositions asymptotically almost surely. *European Journal of Combinatorics*, 72C (2018), 97–111.
6. Balogh, J, **M. Delcourt**, B. Lidický, and C. Palmer. Counting rainbow copies of C_4 in edge-colored hypercubes. *Discrete Applied Mathematics*, 210 (2016), 35–37.
5. **Delcourt, M** and A. Ferber. On a Conjecture of Thomassen. *Electronic Journal of Combinatorics*, Volume 22, Paper 3.2 (2015), 1–8.
4. Balogh, J, S. Das, **M. Delcourt**, H. Liu, and M. Sharifzadeh. Intersecting families of discrete structures are typically trivial. *J. Comb. Theory Ser. A*, Vol. 132, (2015), 224–245.
3. Calkin, N.J., J. Davis, **M. Delcourt**, Z. Engberg, J. Jacob, and K. James. Taking the Convolution out of Bernoulli Convolutions: A Discrete Approach. *Integers*, 13 (2013), no. 19, 1–12.

2. Carraher, J, I. Choi, **M. Delcourt**, L. Erickson, and D.B. West. Locating a robber on a graph via distance queries. *Journal of Theoretical Computer Science*, Vol. 463, 7 Dec. 2012, 54–61.
1. Calkin, N.J., J. Davis, **M. Delcourt**, Z. Engberg, J. Jacob, and K. James. Discrete Bernoulli Convolutions. *Proceedings of the AMS*, Vol. 139, No. 5, May 2011, 1579–1584.

CONFERENCE
PUBLICATIONS

3. Chen, S, **M. Delcourt**, A. Moitra, G. Perarnau, and L. Postle. Improved Bounds for Randomly Sampling Colorings via Linear Programming. *Proceedings of the 30th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2019)*.
2. **Delcourt, M** and L. Postle. On the List Coloring Version of Reed’s Conjecture. *Elec. Notes in Discrete Mathematics*, Vol. 61 (2017), 343–349.
1. **Delcourt, M** and L. Postle. On Star Decompositions of Random Regular Graphs. *Elec. Notes in Discrete Mathematics*, Vol. 61 (2017), 339–342.

COLLOQUIUM
TALKS

4. **Progress towards Nash-Williams’ Conjecture on Triangle Decompositions** . . Apr. 2020
Women in Combinatorics Virtual Colloquium (**Online**)
3. **Rapid mixing of Glauber dynamics for colorings below Vigoda’s threshold** . Sept. 2018
Tutte Colloquium, University of Waterloo (**Canada**)
2. **Random colorings of bounded degree graphs** May 2018
Colloquia in Combinatorics, London School of Economics (**UK**)
1. **Introduction to Extremal and Probabilistic Combinatorics** Sept. 2016
Graduate Student Colloquium, University of Illinois

INVITED
CONFERENCE
TALKS

19. **Hypergraph Matchings Avoiding Forbidden Submatchings** August 2022
Extremal Combinatorics and Geometry Workshop, Banff International Research Station (**Canada**)
18. **Progress towards Nash-Williams’ Conjecture on Triangle Decompositions** . . July 2021
28th British Combinatorial Conference, Online
17. **Progress towards Nash-Williams’ Conjecture on Triangle Decompositions** . . June 2021
8th European Congress of Mathematics, Online
16. **Progress towards Nash-Williams’ Conjecture on Triangle Decompositions** . . June 2021
CMS 75th+1 Anniversary Summer Meeting, Online
15. **Progress towards Nash-Williams’ Conjecture on Triangle Decompositions** . . Oct. 2020
AMS Sectional, Online
14. **Progress towards Nash-Williams’ Conjecture on Triangle Decompositions** . . Oct. 2020
3rd Annual Meeting of the SIAM Texas-Louisiana Section, Online
13. **Local Versions of List Edge-Coloring** Nov. 2019
AMS Sectional, University of California Riverside
12. **Random colorings of bounded degree graphs** Jul. 2018
ICGT, Université Lyon (**France**)

11. **Containers-type results in algebraic geometry** Jul. 2017
SiGMa, University of Waterloo (**Canada**)
10. **On the List Coloring Version of Reed’s Conjecture**Jun. 2017
CanaDAM, Ryerson University (**Canada**)
9. **Intersecting Families of Permutations** Apr. 2017
AMS Sectional, Indiana University
8. **Star decompositions of random regular graphs**Nov. 2016
AMS Sectional, North Carolina State University
7. **Decomposing 4-Regular Random Graphs into Claws**Jun. 2016
SIAM Discrete Math, Georgia State University
6. **Claw decompositions of random 4-regular graphs** Apr. 2016
AMS Sectional, North Dakota State University
5. **The Typical Structure of Intersecting Families** Apr. 2015
Atlanta Lecture Series, Georgia Tech
4. **Real Stable Polynomials and Van der Waerden’s Conjecture**..... Apr. 2015
Kadison-Singer Conjecture, Oberwolfach (**Germany**)
3. **A Discrete Approach to Bernoulli Convolutions** Mar. 2014
Workshop in Combinatorics, University of Szeged (**Hungary**)
2. **Taking the Convolutd out of Bernoulli Convolutions** Jun. 2010
Mini-Conference on Additive Combinatorics, Georgia Tech
1. **Taking the Convolutd out of Bernoulli Convolutions** Oct. 2008
Mini-Conf. on Discrete Math and Algorithms, Clemson University

SELECT
CONTRIBUTED
CONFERENCE
TALKS

8. **The Glauber dynamics for edges colorings of trees**.....July 2019
British Combinatorial Conference, University of Birmingham (**United Kingdom**)
7. **On Star Decompositions of Random Regular Graphs** Aug. 2017
EuroComb, TU Wien (**Austria**)
6. **On the List Coloring Version of Reed’s Conjecture** Aug. 2017
Random Structures and Algorithms, Inst. of Eur. Culture (**Poland**)
5. **Intersecting families in random settings** Jul. 2015
Random Structures and Algorithms, Carnegie Mellon University
4. **Intersecting Families of Permutations**Jun. 2015
Conn. in Discrete Mathematics, Simon Fraser University (**Canada**)
3. **Counting rainbow copies of C_4 in hypercubes**Jul. 2014
SUMMIT 240, Eötvös Loránd University (**Hungary**)
2. **Discrete Bernoulli Convolutions** Jul. 2013
7th Czech-Slovak Int. Symp., P.J. Šafárik University (**Slovakia**)
1. **Discrete Bernoulli Convolutions** Apr. 2013
Graduate Student Combinatorics Conf., University of Minnesota

INVITED
SEMINAR
TALKS AWAY
FROM HOME
INSTITUTION

24. **Umeå University (Online)**, Discrete Mathematics Seminar Oct. 2022
23. **Oxford (Online)**, Combinatorial Theory Seminar Oct. 2022
22. **University of Toronto**, Probability Seminar Oct. 2022
21. **Harvard University (Online)**, CMSA Seminar May 2022
21. **University of Warwick (Online)**, Combinatorics Seminar Feb. 2022
20. **University of Birmingham (Online)**, Combinatorics Seminar Oct. 2021
19. **Combinatorial Mathematics Society of Australia (Online)**, CMSA Seminar .. Oct. 2021
18. **Georgia Institute of Technology**, Graph Theory Seminar Feb. 2021
17. **University of Illinois at Urbana-Champaign**, Graph Theory and Combinatorics Feb. 2020
16. **Carnegie Mellon University**, ACO Seminar Oct. 2018
15. **Université de Bordeaux (France)**, Graphes et Optimisation Oct. 2018
14. **University of Bristol (UK)**, Combinatorics Seminar Mar. 2018
13. **University of Warwick (UK)**, DIMAP Seminar Oct. 2017
12. **Oxford (UK)**, Combinatorial Theory Seminar Oct. 2017
11. **London School of Economics (UK)**, Combinatorics, Games and Optimisation .. Oct. 2017
10. **Université de Bordeaux (France)**, Graphes et Optimisation Sept. 2017
9. **University of Washington**, UW Combinatorics Seminar Mar. 2017
8. **University of Waterloo (Canada)**, Graphs & Matroids Seminar Nov. 2016
7. **Iowa State University**, Discrete Math Seminar Apr. 2016
6. **University of Waterloo (Canada)**, Graph Theory Seminar Nov. 2015
5. **University of Szeged (Hungary)**, Komb. Bonyolultságelmélet Szem. Jul. 2015
4. **University of Nebraska-Lincoln**, Discrete Math Seminar Jan. 2015
3. **University of Szeged (Hungary)**, Komb. Bonyolultságelmélet Szem. Jul. 2014
2. **ETH Zürich (Switzerland)**, Mittagseminar Jun. 2014
1. **ENS de Lyon (France)**, Séminaire Graphes et structures discrètes Apr. 2014

INVITED
SEMINAR
TALKS AT
HOME
INSTITUTION

- Toronto Metropolitan University (formerly Ryerson University)**, Toronto (Canada)
- Graphs@Ryerson Seminar Dec. 2020
- Graphs@Ryerson Seminar Jan. 2020
- University of Waterloo**, Waterloo (Canada)
- Graph and Matroids Seminar Nov. 2018
- University of Birmingham**, Birmingham (UK)
- Combinatorics and Probability Seminar Oct. 2017

University of Illinois, Urbana, IL

Algebra, Geometry and Combinatorics Seminar Nov. 2016
Graph Theory and Combinatorics Seminar Oct. 2016, Nov. 2014
Graduate Student Number Theory Seminar Oct. 2015, Oct. 2013

Georgia Tech, Atlanta, GA

Undergraduate Research Seminar Seminar Dec. 2009
Senior Seminar Series Nov. 2008

ADVISING
AND
MENTORING

Mentor, Nebraska Conference for Undergraduate Women in Math, UNL Jan. 2015

Postdoctoral Researchers

J.D. Nir, Toronto Metropolitan University Sep. 2022–Present
R. Cushman, Ryerson University Sep. 2021–Aug. 2022
N. Behague, Ryerson University Oct. 2020–Oct. 2021

Doctoral Students

Z. Zhang, Toronto Metropolitan University Sep. 2021–Present
R. Huq, Toronto Metropolitan University Sep. 2021–Present
B. Pittman, Toronto Metropolitan University Sep. 2020–Present

Undergraduate Research Students

A. Ahmed, Ryerson University Winter 2020
N. Marmon, Ryerson University Winter 2020
R. Shaleh, University of Waterloo Summer 2019
A. Zhou, University of Waterloo Spring 2019
J. Bi and **J.A. Sanchez** and **Y. Ren** and **S. Zha**, University of Illinois Fall 2016
K. Hou and **Y. Song** and **Z. Wang**, University of Illinois Fall 2013

COMMUNITY
SERVICE

Outreach Grants

Dolciani Math Enrichment Grant (Co-author \$6,000), Math. Association of America ... 2016
2015 Public Engagement Grant (PI, \$8,000), University of Illinois 2014
2014 Public Engagement Grant (PI, \$6,500), University of Illinois 2013

Outreach Awards

Graduate Student Leadership Award, University of Illinois Apr. 2016
Exceptional Research and Service Award, School of Mathematics, Georgia Tech 2011
Volunteer, Gathering for Gardner, University of Illinois 2017
Volunteer, Central Illinois Day of the Girl 2014
Oral Judge, ICTM State Math Contest Finals 2012–2013

Illinois Geometry Lab, University of Illinois

Outreach Manager 2014–2016
Associate Manager 2013–2014

Association for Women in Mathematics, University of Illinois

Outreach Chair 2015–2016
President 2014–2015

Vice President 2012–2014

Sonia Kovalevsky Math Day, University of Illinois

Organizer 2013–2017

Girls Engaged in Math and Science (GEMS), Orpheum Children’s Science Museum

Organizer 2014–2015

Summer Illinois Math Camp, University of Illinois

Organizer 2015

Instructor, Number Theory 2015

Georgia Tech High School Math Competition, Georgia Tech

Organizer 2008–2011

TEACHING
EXPERIENCE

Teaching Awards

Graduate Teacher Certificate Award, University of Illinois Apr. 2013

On List of Teachers Ranked as Outstanding (top 10%), University of Illinois ... Spring 2017

On List of Teachers Ranked as Excellent (top 30%), University of Illinois ... Spring 2012, Fall 2016

Toronto Metropolitan University (formerly Ryerson University), Toronto, Canada

Coordinator and Instructor

- Math 210: Discrete Mathematics II **Winter 2023**
- Math 607: Graph Theory **Winter 2020, Winter 2023**

Instructor, with Curriculum Responsibilities

- Math 110: Discrete Mathematics I **Fall 2022**
- Math 240: Calculus II **Winter 2021**
- Math 108: Linear Algebra **Fall 2020**
- Math 141: Linear Algebra for Engineers **Fall 2019, Fall 2020**

University of Waterloo, Waterloo, Canada

Coordinator and Instructor

- Math 137: Calculus I for Honours **Winter 2019**

Instructor, with Curriculum Responsibilities

- Math 239: Introduction to Combinatorics **Fall 2018**

University of Illinois, Urbana, IL

Instructor, with Curriculum Responsibilities

- Math 181: A Mathematical World **Fall 2016, Spring 2017**

Teaching Assistant

- Math 241: Calculus III **Spring 2012**

- Math 221: Calculus I **Fall 2011**

Georgia Tech, Atlanta, GA

Teaching Assistant

- Math 2401: Calculus III **Fall 2009**

Grader

- Math 3012: Applied Combinatorics **Fall 2010, Spring 2010**

PROFESSIONAL **Service Awards**

SERVICE

- Outstanding Referee Award**, Discrete Mathematics 2017
- Exceptional Research and Service Award**, School of Mathematics, Georgia Tech 2011

Referee Service

- *Advances in Combinatorics*
- *Journal of Combinatorial Theory, Series A*
- *Journal of Combinatorial Theory, Series B*
- *Combinatorics, Probability and Computing*
- *Discrete Mathematics*
- *Electronic Journal of Combinatorics*
- *European Journal of Combinatorics*
- *Journal of Graph Theory*
- *SIAM Journal on Discrete Mathematics (SIDMA)*
- *ACM-SIAM Symposium on Discrete Algorithms (SODA)*

Panel Service

- Reviewer, NSF Grants 2021.
- Member, NSF Panel 2019.

Conference Service

- Co-organizer (with Zdenek Dvorak and Luke Postle): Waterloo Coloring Conference , University of Waterloo (Canada) Sept. 23–27, 2019.
- Co-organizer (with Luke Postle): Mini-symposium on Graph Coloring, CanaDAM, Ryerson University (Canada) June 11–13, 2017.

INSTITUTIONAL **Seminar Service**

SERVICE

- Organizer: Graphs at Ryerson Seminar, Ryerson University (Canada) Fall 2019, Winter 2020, Fall 2020, Winter 2021.
- Organizer: Entropy and Counting Reading Group, University of Waterloo (Canada) Winter 2019.
- Organizer: Graphs and Matroids Seminar, University of Waterloo (Canada) Winter 2019.

Committee Service

- Canadian Mathematical Olympiad Committee Aug 2022–Present

Toronto Metropolitan University (formerly Ryerson University), Toronto, Canada

- Research and Graduate Studies Committee (Dep. of Mathematics) May 2022–Present
- Remote Teaching Task Force (Faculty of Science) May 2020–May 2022
- Remote Teaching Committee (Department of Mathematics) Jan. 2021–May 2021

University of Waterloo, Waterloo, Canada

- Women in Math Committee (Faculty of Mathematics) Sept. 2018–July 2019

University of Illinois, Urbana, IL

- Illinois Geometry Lab Selection Committee Aug. 2013–May 2016
- Undergraduate Affairs Committee Jan. 2016–May 2016
- Graduate Affairs Committee Aug. 2013–Dec. 2013

Georgia Tech, Atlanta, GA

- Georgia Tech High School Math Competition Committee Aug. 2008–May 2011

SELECT	Barbados Workshop on Structural Graph Theory, Bellairs Research Inst. (Barbados) . Dec. 2022
WORKSHOPS	Extremal Combinatorics and Geometry Workshop, Banff (Canada) Aug. 2022
ATTENDED	Graph Colouring Workshop, Banff International Research Station (Canada) Oct. 2021
	Geometry and Art Workshop, Banff International Research Station (Canada) Feb. 2021
	Model Theory Workshop, Banff International Research Station (Canada) June 2020
	Barbados Workshop on Structural Graph Theory, Bellairs Research Inst. (Barbados) .. Apr. 2019
	Graph Theory Workshop, Oberwolfach (Germany) Jan. 2019
	Barbados Workshop on Structural Graph Theory, Bellairs Research Inst. (Barbados) .. Apr. 2018
	Barbados Workshop on Structural Graph Theory, Bellairs Research Inst. (Barbados) . Mar. 2017
	Ergodic theory and Combinatorics Conf., University of Agder (Norway) Jun. 2015
	Kadison-Singer Conjecture, Oberwolfach (Germany) Apr. 2015
	Graph limits, groups and stochastic processes, Rényi Institute (Hungary) Jun. 2014
	Program for Women and Math, IAS and Princeton May 2013
	Séminaire de Mathématiques Supérieures, Université de Montréal (Canada) Jul. 2012
	Second Montreal Spring School in Graph Theory, McGill (Canada) Jun. 2012
	Summer School in Combinatorics, University of Waterloo (Canada) Jul. 2010

PROFESSIONAL **Member**, Association for Women in Mathematics (AWM)

MEMBERSHIPS **Member**, American Mathematical Society (AMS)