Luke Postle

Canada Research Chair in Graph Theory

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Education

Dec 2012 **Ph.D. in Algorithms, Combinatorics and Optimization**, *Georgia Institute of Technology*, Atlanta, GA.
Thesis: 5-*list-coloring graphs on surfaces*
Advisor: Robin Thomas

May 2011 **Master's in Mathematics**, *Georgia Institute of Technbology*, Atlanta, GA.

May 2007 **B.S. in Mathematics and Physics**, *Gordon College*, Wenham, MA.
Summa cum Laude

Employment History

Jul 2019 - Present **Associate Professor**, *University of Waterloo*, Waterloo, ON.

May 2014 - Jun 2019 **Assistant Professor**, *University of Waterloo*, Waterloo, ON.

Sep 2012 - May 2014 **Emory Mathematics Fellow**, *Emory University*, Atlanta, Georgia USA.

Recognitions

2021 Coxeter-James Prize, Canadian Mathematical Society.

Tier 2 Canada Research Chair, NSERC, 2020-2025 ($500,000 value).

Golden Jubilee Research Excellence Award, Faculty of Mathematics, University of Waterloo, 2018 (1-2 awarded per year).

Early Researcher Award, Province of Ontario, 2016-2021 ($190,000 value).

Tier 2 Canada Research Chair, NSERC, 2015-2020 ($500,000 value).

2014 A.C.O. Outstanding Student Prize, ACO Program, Georgia Institute of Technology, One awarded every other year; $750 cash prize.

Best Ph.D. Thesis Award, Department of Mathematics, Georgia Institute of Technology, 2012 (one awarded per year).

Top Ph.D. Student Award, Department of Mathematics, Georgia Institute of Technology, 2010 (one awarded per year).

National Science Foundation Graduate Research Fellowship, National Science Foundation, 2009-2012 ($120,000 value).

Georgia Tech Institute Fellowship, Georgia Institute of Technology, 2007-2011 ($56,000 value).

Research Funding History

2020-2025 **Tier 2 Canada Research Chair**, NSERC, $500,000 (CAD).

2019-2022 **Discovery Accelerator Supplement**, NSERC, $120,000 (CAD).

2019-2024 **Discovery Grant**, NSERC, $240,000 (CAD).

2019 **International Research Partnership Grant (co-PI)**, University of Waterloo, $10,000 (CAD).

2018 **Waterloo-Bordeaux Travel Grant**, University of Bordeaux, $15,000 (Euro).

2017 **Waterloo-Bordeaux Travel Grant**, University of Bordeaux, $11,300 (Euro).

2016-2021 **Early Researcher Award**, Province of Ontario, $190,000 (CAD).

2015-2020 **Tier 2 Canada Research Chair**, NSERC, $500,000 (CAD).

2014-2019 **Discovery Grant**, NSERC, $75,000 (CAD).

2014-2017 **Start-up Grant**, University of Waterloo, $50,000 (CAD).

2009-2012 **Graduate Research Fellowship**, NSF, $120,000 (USD).

2007-2011 **Georgia Tech Institute Fellowship**, Georgia Tech, $56,000 (USD).

Publications: Submitted Articles

1. L. Li, L. Postle. Chromatic number of triangle-free hypergraphs, submitted.

2. Z. Dvorak, L. Postle. Triangle-free planar graphs with at most $64^{0.731n}$ 3-colorings, submitted, arXiv:2108.12669

3. L. Postle, E. Smith-Roberge. Local girth choosability of planar graphs, submitted, arXiv:2108.03315

4. M. Delcourt, L. Postle. Reducing Linear Hadwiger's Conjecture to Coloring Small graphs, submitted, 29 pages. combines arXiv:2006.11798 and arXiv:2108.01633

5. R. Gould, V. Larsen, L. Postle. Structure in sparse k-critical graphs, submitted, 20 pages, arXiv:2107.00976

6. L. Postle. Further progress towards the List and Odd versions of Hadwiger's Conjecture, submitted, 28 pages, arXiv:2010.05999

7. Z. Dvorak, L. Postle. On decidability of hyperbolicity, submitted, 13 pages. arXiv:2010.01634

8. M. Bonamy, F. Kardos, T. Kelly, L. Postle. Fractional vertex-arboricity of planar graphs, submitted, 14 pages. arXiv:2009.12189

9. R. Lang, L. Postle. An Improved Bound for the Linear Arboricity Conjecture, submitted, 17 pages. arXiv:2008.04251

10. M. Bonamy, M. Delcourt, R. Lang, L. Postle. Edge-colouring graphs with local list sizes, submitted, 22 pages. arxiv:2007.14944

11. S. Norin, L. Postle, Z. Song. Breaking the degeneracy barrier for coloring graphs with no K_t minor, submitted, 21 pages. arXiv:1910.09378v2

12. T. Kelly, L. Postle. On the Density of Critical Graphs with no Large Cliques, revision submitted, 27 pages. arXiv:1911.02661

13. T. Kelly, L. Postle. Fractional Coloring with Local Demands, submitted, 37 pages. arXiv:1811.11806

14. W. Gao, L. Postle. On the Minimal Edge Density of K_4-free 6-critical graphs, submitted, 55 pages. arXiv:1811.02940

15. M. Delcourt, G. Perarnau, L. Postle. Rapid mixing of Glauber dynamics for colorings below Vigoda's 11/6 threshold, submitted. 21 pages. arXiv:1804.04025

16. M. Bonamy, T. Kelly, P. Nelson, L. Postle. Bounding the Chromatic Number by a fraction of Maximum Degree for Graphs without Large Cliques. Journal of Combinatorial Theory Ser. B, revision submitted, 14 pages. arXiv:1803.01051

Publications: Accepted/In Press Journal Articles

1. M. Bonamy, T. Perrett, L. Postle. Colouring graphs with sparse neighbourhoods: Bounds and applications. Journal of Combinatorial Theory Ser. B, accepted, arXiv:1810.06704

2. L. Postle, E. Smith-Roberge. Density of C_7-critical graphs, Combinatorica, to appear, 36 pages. arXiv:1903.04453

3. M. Molloy, L. Postle. Asymptotically good edge correspondence colouring, Journal of Graph Theory, available online, 21 pages, https://doi.org/10.1002/jgt.22796.

4. S. Norin, L. Postle. Connectivity and choosability of graphs with no K_t minor, JCTB, in press, available online, 20 pages, https://doi.org/10.1016/j.jctb.2021.02.001

Publications: Published Journal Articles

30. R. Kim, L. Postle. The List Linear Arboricity of Graphs, Journal of Graph Theory, Volume 98, Issue 1, September 2021, pp. 125–140.

29. L. Postle. 3-List-Coloring Graphs of Girth at least Five on Surfaces. Journal of Combinatorial Theory Ser. B, Volume 147, March 2021, pp. 1–36.

28. M. Delcourt, L. Postle. Progress towards Nash-Williams' Conjecture on Triangle Decompositions, Journal of Combinatorial Theory Ser. B, Volume 146, January 2021, pp. 382–416.

27. Z. Dvorak, N. Morrison, J. Noel, S. Norin, L. Postle. Bounding the number of cycles in a graph in terms of its degree sequence. European Journal of Combinatorics, Volume 91, January 2021.

26. T. Kelly, L. Postle. A Local Epsilon Version of Reed's Conjecture. Journal of Combinatorial Theory Ser. B., Volume 141, March 2020, pp. 181–222.

25. M. Faron, L. Postle. On the clique number of the square of a line graph and its relation to Ore-degree. Journal of Graph Theory, Volume 92 (3), November 2019, pp. 261–274.

24. Z. Dvorak, S. Norin, L. Postle. List coloring with requests. Journal of Graph Theory, Volume 92 (3), November 2019, pp. 191–206.

23. M. Bonamy, F. Kardos, T. Kelly, P. Nelson, L. Postle. The structure of binary matroids with no induced claw or Fano plane restriction. Advances in Combinatorics, October 2019, https://doi.org/10.19086/aic.10256

22. M. Merker, L. Postle. Bounded Diameter Arboricity. Journal of Graph Theory, Volume 90 (4), April 2019, pp. 629–641.

21. M. Bonamy, D. Cranston, L. Postle. Planar graphs of girth at least five are Square $(\Delta+2)$-Choosable. Journal of Combinatorial Theory Ser. B, Volume 134, January 2019, pp. 218–238.

20. L. Postle, R. Thomas. Hyperbolic families and coloring graphs on surfaces. Transactions of the American Mathematical Society Series B 5 (2018), pp. 167–221.

19. M. Delcourt, L. Postle. Random 4-regular graphs have 3-star decompositions asymptotically almost surely. European Journal of Combinatorics, Volume 72, August 2018, pp. 97–111.

18. G. Chen, Y. Gao, R. Kim, L. Postle, S. Shan. Chromatic index determined by fractional chromatic index. Journal of Combinatorial Theory Ser. B, Volume 131, July 2018, pp. 85–108.

17. L. Postle. Characterizing 4-Critical Graphs of Ore-degree at Most Seven. Journal of Combinatorial Theory Ser. B, Volume 129, March 2018, pp. 107–147.

16. Z. Dvorak, L. Postle. Correspondence coloring and its application to list-coloring planar graphs without cycles of lengths 4 to 8. Journal of Combinatorial Theory Ser. B, Volume 129, March 2018, pp. 38–54.

15. T. Kelly, L. Postle. Exponentially Many 4-List-Colorings of Triangle-Free Graphs on Surfaces. Journal of Graph Theory, Volume 87 (2), February 2018, pp. 230–238.

14. L. Postle, R. Thomas. Five-List-Colouring Graphs on Surfaces III. One List of Size One and One List of Size Two, Journal of Combinatorial Theory Ser. B, Volume 128, January 2018, pp. 1–16.

13. N. Bowler, J. Carmesin, L. Postle. Reconstruction of infinite matroids from their 3-connected minors. European Journal of Combinatorics Volume 67, January 2018, pp. 126–144.

12. L. Postle, On the Minimum Number of Edges in Triangle-Free 5-Critical Graphs, European Journal of Combinatorics, Volume 66, December 2017, pp. 264–280.

11. C. Liu, L. Postle. On the Minimum Edge-Density of 4-Critical Graphs of Girth Five, Journal of Graph Theory, Volume 86, Issue 4, December 2017, pp. 387–405.

10. Z. Dvorak, L. Postle. Density of 5/2-critical graphs, Combinatorica, Volume 37 (5), October 2017, pp. 863–886.

9. Z. Dvorak, B. Lidicky, B. Mohar, L. Postle. 5-List-Coloring Planar Graphs with Distant Precolored Vertices. Journal of Combinatorial Theory Ser. B, Volume 122, January 2017, pp. 311–352.

8. D. Cranston, L. Postle, C. Xue, C. Yerger. Modified linear programming and class 0 bounds for graph pebbling, Journal of Combinatorial Optimization, July 2016, pp. 1–19.

7. L. Postle, R. Thomas. Five-List-Colouring Graphs on Surfaces II. A linear bound for critical graphs in a disk, Journal of Combinatorial Theory Ser. B, Volume 119, July 2016, pp. 42–65.

6. E. Aigner-Horev, R. Diestel, L. Postle. The Structure of 2-Separations of Infinite Matroids, Journal of Combinatorial Theory, Ser. B, Volume 116, January 2016, pp. 25–56.

5. L. Postle, R. Thomas. Five-List-Colouring Graphs on Surfaces I. Two with lists of size Two Theorem, Journal of Combinatorial Theory Ser. B, Volume 111, March 2015, pp. 234–241.

4. L. Postle. Pebbling Graphs of Fixed Diameter, Journal of Graph Theory, Volume 75, Issue 4, April 2014, pp. 302–310.

3. A. Asadi, Z. Dvorak, L. Postle, R. Thomas. Sub-Exponentially Many 3-Colourings of Triangle-Free Planar Graphs. Journal of Combinatorial Theory, Ser. B, Volume 103, Issue 6, November 2013, pp. 706–712.

2. L. Postle, N. Streib, C. Yerger. Pebbling Graphs of Diameter Three and Four. Journal of Graph Theory, Volume 72, Issue 4, April 2013, pp. 398–417.

1. N. Chenette, L. Postle, N. Streib, R. Thomas, C. Yerger. Five-Colouring Graphs on the Klein Bottle. Journal of Combinatorial Theory, Ser. B, Volume 102, Issue 5, September 2012, pp. 1067–1098.

Conference Publications: Published Articles

13. L. Postle, Linear-Time and Efficient Distributed Algorithms for List Coloring Graphs on Surfaces, 2019 IEEE 60th Annual Symposium on Foundations of Computer Science (FOCS), pp. 929–941.

12. L. Postle, E. Smith-Roberge, On the Density of C_7-critical graphs, Acta Mathematica Universitatis Comenianae, 88(3), 1009–1016.

11. M. Bonamy, M. Delcourt, R. Lang, L. Postle, Asymptotically Good Local List Edge Colourings, Acta Mathematica Universitatis Comenianae, 88(3), 489–494.

10. S. Chen, M. Delcourt, A. Moitra, G. Perarnau, L. Postle. Improved Bounds for Randomly Sampling Colorings via Linear Programming. Proceedings of the Thirteenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2019), 2216–2234.

9. M. Delcourt, L. Postle. On Star Decomposition of Random Regular Graphs. Electronic Notes in Discrete Mathematics, Volume 61 (Eurocomb 2017 conference proceedings), pp. 339–342.

8. M. Delcourt, L. Postle. On the List Coloring Version of Reed's Conjecture. Electronic Notes in Discrete Mathematics, Volume 61 (Eurocomb 2017 conference proceedings), pp. 343–349.

7. T. Kelly, L. Postle. A Local Epsilon Version of Reed's Conjecture. Electronic Notes in Discrete Mathematics, Volume 61 (Eurocomb 2017 conference proceedings), pp. 719-725.

6. The Minimum Edge-Density of 5-Critical Triangle-Free Graphs, Electronic Notes in Discrete Mathematics, Volume 49, November 2015, 667–673.

5. Minor-Minimal Non-Projective Planar Graphs with an Internal 3-Separation (with A. Asadi and R. Thomas), Electronic Notes in Discrete Mathematics 38 (2011), 69–75.

4. Decomposing Infinite Matroids into their 3-Connected Minors (with E. Aigner- Horev and R. Diestel), Electronic Notes in Discrete Mathematics 38 (2011), 11–16.

3. Sub-Exponentially Many 3-Colourings of Triangle-Free Planar Graphs (with A. Asadi and R. Thomas), Electronic Notes in Discrete Mathematics 34 (2009), 81–87.

2. Pebbling Graphs of Diameter Three and Four (with N. Streib and C. Yerger), Electronic Notes in Discrete Mathematics 34 (2009), 21–28.

1. Six-critical graphs on the Klein bottle. Extended abstract (with N. Chenette, K. Kawarabayashi, D. Kral, J. Kyncl, B. Lidicky, N. Streib, R. Thomas and C. Yerger), Electronic Notes in Discrete Mathematics 31 (2008), 235–240.

Student Supervision

Current Supervisions

2018- Lise Turner, *PhD student.*

2018- Evelyne Smith-Roberge, *PhD student.*

2020- Lina Li, *Postdoctoral Fellow.*

2021- Matthew Coulson, *Postdoctoral Fellow.*

Previous Supervisions

2019-2021 Benjamin Moore, *PhD student*. Graduated Spring 2021. Currently postdoc at Charles University, Prague, Czech Republic.

2018-2020 Matthew Kroeker, *Master's student*. Graduated Spring 2020. Currently Ph.D. student at University of Waterloo.

2018-2020 Richard Lang, *Postdoctoral Fellow*. Currently postdoc at Heidelberg University, Germany.

Fall 2019 Joseph Poremba, *Undergraduate Research Assistant*. Currently Master's student at the University of British Columbia.

2015-2019 Tom Kelly, *Ph.D. student*. Graduated Spring 2019. University Finalist in 2019 Governor General's Gold Medal Competition (for best Ph.D. thesis). Currently Postdoc at University of Birmingham.

2016-2018 Evelyne Smith-Roberge, *Master's student*. Graduated Spring 2018. Currently Ph.D. student at University of Waterloo.

2016-2018 Shayla Redlin, *Master's student*. Graduated Spring 2018. Currently Ph.D. student at University of Waterloo.

Summer 2018 Joseph Poremba, *Undergraduate Research Assistant*.

2016-2017 Ringi Kim, *Postdoctoral Fellow*. Currently Postdoc at KAIST.

Winter 2017 Sina Abbasi, *Undergraduate Research Assistant*.

Jan 2015-Aug 2016 Daqi Chen, *Master's student*. Graduated Spring 2016. Currently Ph.D. student at Carnegie Mellon Univeristy.

Summer 2016 Sam Yusim, *Undergraduate Research Assistant*. Currently Master's student at University of Waterloo.

Summer 2016 Maxime Farron, *International Visiting Graduate Student* from ENS Lyon.

Fall 2015 Marthe Bonamy, *Postdoctoral Fellow*. Currently CNRS position at University of Bordeaux.

Fall 2015 Thomas Perrett, *International Visiting Ph.D. Student* from Technical University of Denmark. Ph.D. supervisor: Carsten Thomassen.

Summer 2015 Wenbo Gao, *Undergraduate Research Assistant*. Currently Ph.D. student a Columbia University.

2013-2015 Victor Larsen, *Ph.D. student* at Emory University, cosupervised with Ron Gould. Graduated 2015. Currently Assistant Professor at Kennesaw State University.

Conference Organization

Sep 2019 *WaterColor 2019*, organizer. Held at the Unviersity of Waterloo on September 23-27, 2019.

July 2017 *Structure in Graphs and Matroids*, co-organizer. Held at the University of Waterloo on July 16-20, 2017.

June 2017 *Graph Coloring 2-part Contributed Minisymposium*, co-organizer, at CANADAM 2017. Held at Ryerson University in June 2017.

June 2017 *Structural Graph Theory Invited Minisymposium*, organizer, at CANADAM 2017. Held at Ryerson University in June 2017.

Oct 2016 *New Trends in Graph Coloring*, co-organizer. Held at the Banff International Research Station on October 16-21, 2016.

June 2015 *Structural Graph Theory Invited Minisymposium*, organizer, at CANADAM 2015. Held at the University of Saskatoon in June 2015.

Seminar Organization

Fall 2018-Winter 2019 *Tutte Colloquium*, organizer, University of Waterloo.

Fall 2016-Winter 2017 *Tutte Colloquium*, organizer, University of Waterloo.

Fall 2015-Summer 2016 *Graph Theory Seminar*, organizer, University of Waterloo.

2008- *ACO Student Seminar*, co-founder, at Georgia Tech.

Referee Activity

Referee for Journal of Combinatorial Theory Series B, Journal of Graph Theory, Duke Mathematical Journal, SIAM Journal on Discrete Mathematics, Proceedings of the AMS, Proceedings of the LMS, SODA. Served as reviewer of grants for NSERC.

Committee Work

Summer 2021-Winter 2022 C&O Tenure and Promotion Committee.

Winter 2019- Math Faculty Student Appeals Committee.

Fall 2017-Fall 2021 Math Faculty Graduate Committee.

Fall 2019-Summer 2020 C&O Hiring Committee.

Summer 2019-Winter 2020 C&O Tenure and Promotion Committee.

Fall 2014-Summer 2016 C&O Graduate Committee.

Fall 2015-Summer 2016 AHS Committee, Faculty of Math Representative.

Other University Service

2021 Graph Theory Comprehensive Examiner.

Winter 2020	Master's Thesis Reader for Adam Brown.
Fall 2019	Master's Thesis Reader for Courtney Horrocks.
Summer 2019	Ph.D. Thesis Committee Member for Christopher van Bommel.
Summer 2019	Ph.D. Thesis Committee Member for Alessandra Graf.
Fall 2018-Winter 2019	Organizer of the Tutte Colloquium at University of Waterloo.
2018	Graph Theory Comprehensive Examiner.
Winter 2018	Ph.D. Thesis Committee Member for Alan Arroyo Guevara.
Winter 2018	Master's Thesis Reader for Maxwell Levit.
Summer 2017	Master's Thesis Reader for Amena Mahmoud.
Winter 2017	Coordinator for Math 239.
Fall 2016-Winter 2017	Organizer of the Tutte Colloquium at University of Waterloo.
2016	Graph Theory Comprehensive Examiner.
Summer 2016	Master's Thesis Reader for Abhinnav Shantanam
Summer 2016	Master's Thesis Reader for Matthew Sullivan.
2015	Graph Theory Comprehensive Examiner.

Invited Conference Presentations

36. *"Recent Progress on Hadwiger's conjecture"*, Oberwolfach Workshop on Graph Theory, Hybrid, Jan 3-7, 2022.

35. *"On Hadwiger's conjecture"*, CMS 2021 Winter Meeting, Coxeter James Prize Talk, Online, Dec 2-7, 2021.

34. *"Reducing linear Hadwiger's conjecture to coloring small graphs"*, BIRS Workshop on New Perspectives in Coloring and Structure, Online, Oct 18-22, 2021.

33. *"Improving the general bound for Hadwiger's conjecture"*, EuroComb 2021, Online, Sep 6-10, 2021, Invited to Robin Thomas Memorial Session.

32. *"On Hadwiger's Conjecture"*, Canadian Undegraduate Mathematics Conference, Online, Aug 19-22, 2021, Keynote Speaker.

31. *"On Hadwiger's Conjecture"*, 8th European Congress of Mathematics, Online, Jun 20-26, 2021, Invited to Minisymposium on Extremal and Probabilistic Combinatorics.

30. *"On Hadwiger's Conjecture"*, CMS 75+1 Summer Meeting, Online, Jun 7-11, 2021, Invited to Special Session on Modern Trends in Graph Theory.

29. *"Edge coloring with local list sizes"*, AMS Fall Western Sectional, Online, Oct 24-25, 2020, Invited to Special Session on Graph Theory.

28. *"Edge coloring with local list sizes"*, SIAM 2020 Texas-Louisiana Section, Online, Oct 17-18, 2020. Invited to Mini-Symposium on Graph Theory.

27. *"Improving Bounds for Hadwiger's conjecture"*, New Perspectives in Coloring and Structure, BIRS, Banff, AB, Canada, Mar 15-20, 2020 (Held online due to COVID-19).

26. *"Linear-Time and Efficient Distributed Algorithms for List Coloring Graphs on Surfaces"*, FOCS 2019, Baltimore, MD, USA, Nov 9-12, 2019.

25. *"Local and MAD Versions of Reed's Conjecture"*, BCC 2019, Birmingham, UK, Jul 29-Aug 2, 2019. Invited to Mini-Symposium on Graph Coloring.

24. *"Local Versions of Coloring Theorems"*, Workshop on Graph Theory, Oberwolfach, Germany, Jan 7-11, 2019.

23. *"On the List Coloring Version of Reed's Conjecture"*, EuroComb 2017, Vienna, Austria, Aug 28-Sep 1, 2017.

22. *"On a Local Version of Reed's Conjecture"*, Geometric and Structural Graph Theory Workshop, Banff, AB, Canada, Aug 21-25, 2017.

21. *"List Coloring with Requests"*, CanaDAM 2017, Toronto, ON, Canada, Jun 12-16, 2017.

20. *"On the List Coloring Version of Reed's Conjecture"*, ACO 25, Atlanta, GA, USA, Jan 9-11, 2017.

19. *"A Tutorial on The Potential Method"*, New Trends in Graph Coloring, BIRS, Banff, AB, Canada, Oct 16-21, 2016.

18. *"Bounded Diameter Arboricity"*, Southern Italian Workshop on Algorithms and Graphs, Bari, Italy, Sep 26-30, 2016.

17. *"On Reed's Conjecture"*, International Workshop on Structure in Graphs and Matroids, Eindhoven, Netherlands, Jul 25-29, 2016.

16. *"Beyond Grotzsch's Theorem: 3-colorings of Graphs of Girth Five on Surfaces"*, Directed Graphs Conference, Waterloo, Ontario, Canada, Jul 7-8, 2016.

15. *"Generalizations of Reed's Conjecture"*, SIAM DM '16, Atlanta, Georgia, USA, Jun 6-10, 2016. Invited to Mini-Symposium on Graph Coloring.

14. *"On Reed's Conjecture"*, AMS Sectional Meeting, Apr 15-17, 2016, Fargo, ND, USA. Invited to Session on Probabilistic and Extremal Combinatorics.

13. *"How Many Colors Can We Save"*, Workshop on Graph Theory, Oberwolfach, Germany, Jan 11-15, 2016.

12. *"Improved Bounds on Chromatic Number"*, CMS Winter 2015 Meeting, December 4, 2015, Montreal, QC, Canada. Invited to Graph Theory Session.

11. *"Bounded Diameter Arboricity"*, AMS Sectional Meeting, Oct 2-4 2015, Chicago, IL, USA. Invited to Session on Graph Theory, Hypergraphs and Set Systems.

10. *"The Minimum Edge-Density of 5-Critical Triangle-Free Graphs"*, AMS Sectional Meeting, April 18-19, 2015, Las Vegas, Nevada, USA. Invited to Session on Graph Theory.

9. *"The Structure of k-critical graphs with few edges"*, Atlanta Lecture Series XV, Georgia Institute of Technology, Atlanta, GA, USA, April 4-5, 2015. Hour-long talk.

8. *"Potential Technique in Graph Colouring"*, SIAM DM '14, Minneapolis, Minnesota. Jun 16-19,

2014. Invited to Mini-symposium on Graph Colouring.

7. *"On the Minimum Density of 4-critical Graphs of Girth Five"*, Ottawa-Carleton Discrete Math Days, Ottawa, Canada. May 1, 2014. Hour-long talk.
6. *"Linear Isoperimetric Bounds in Graph Colouring"*, CanaDAM 2013, St. John's, Newfoundland, Canada, Jun 10-13, 2013. Invited to Mini-symposium on Chromatic Graph Theory.
5. *"Linear Isoperimetric Bounds in Graph Colouring"*, Workshop on Graph Theory, Oberwolfach, Germany, Jan 14-18 2013. Hour-long talk.
4. *"Linear Bounds in Graph Colouring: A Unifying Theory"*, Atlanta Lecture Series VII, Emory University, Atlanta, GA, USA, Nov 3-4 2012.
3. *"5-List-Colouring Graphs on Surfaces"*, Graph Theory at Georgia Tech, Georgia Tech, Atlanta, GA, USA, May 7-11 2012.
2. *"Number of Vertices of a 6-Critical Graph is Linear in Genus"*, SIAM DM '10, Jun 14-17, 2010, Austin, TX, USA. Invited to Mini-symposium on Structural Graph Theory.
1. *"Sub-Exponentially Many 3-Colourings of Triangle-Free Planar Graphs"*, AMS Sectional Meeting, Oct 30-Nov 1, 2009, Boca Raton, FL, USA. Invited to Session on Graph Theory.

Other Conference Presentations

18. *"Linear-time Algorithms for List-Coloring Graphs on Surfaces"*, Barbados Graph Theory Workshop, Holetown, Barbados, Apr 5-12, 2019.
17. *"Mixing Time of Glauber Dynamics"*, Barbados Graph Theory Workshop, Holetown, Barbados, Apr 20-Apr 27, 2018.
16. *"List-Colouring and Reed's Conjecture"*, Barbados Graph Theory Workshop, Holetown, Barbados, Mar 24-Mar 31, 2017.
15. *"Progress on Reed's chi-delta-omega conjecture"*, Barbados Graph Theory Workshop, Holetown, Barbados, Mar 25-Apr 1, 2016.
14. *"5-Critical Triangle-Free Graphs"*, EuroComb 15, Bergen, Norway, Aug 31-Sep 4, 2015.
13. *"On the structure of k-critical graphs with few edges"*, Connections in Discrete Mathematics, Simon Frasier University, BC, Canada, Jun 15-19, 2015.
12. *"Colouring and MAD"*, Barbados Graph Theory Workshop, Holetown, Barbados. Mar 27-Apr 3, 2015.
11. *"4-Critical graphs of girth five have more than 5n/3 edges"*, ICGT '14, Grenoble, France. Jun 30-July 4, 2014.
10. *"Edge-critical graphs with few edges and Ore's conjecture"*, Barbados Graph Theory Workshop, Holetown, Barbados. Mar 28-Apr 4, 2014.
9. *"3-Coloring and 3-List-Colouring Graphs of girth at least five"*, Bertinoro Workshop on Algorithms and Graphs, Bertinoro, Italy. Dec 15-20, 2013.
8. *"3-Coloring and 3-List-Colouring Graphs of girth at least five"*, Workshop on Graph Minors, Banff, Alberta, Canada. Sep 29-Oct 4, 2013.
7. *"5-List-Colouring Graphs on Surfaces"*, Third Workshop on Graphs and Matroids, Jul 29-Aug 3, 2012, Maastricht, Netherlands.

6. *"Minor-Minimal Non-Projective Planar Graphs with an Internal 3-Separation"*, EuroComb '11, Aug 29-Sep 2, 2011, Budapest, Hungary. Selected by Program Committee.
5. *"Decomposing Infinite Matroids into their 3-Connected Minors"*, EuroComb '11, Aug 29-Sep 2, 2011, Budapest, Hungary. Selected by Program Committee.
4. *"Number of Vertices of a 6-Critical Graph is Linear in Genus"*, Second Workshop on Graphs and Matroids, Aug 1-7, 2010, Maastricht, Netherlands.
3. *"Sub-Exponentially Many 3-Colourings of Triangle-Free Planar Graphs"*, EuroComb '09, Sep 7-11, 2009, Bordeaux, France. Selected by Program Committee.
2. *"Five-Colouring Graphs on the Klein Bottle"*, Topological and Geometric Graph Theory, May 19-23, 2008, Paris, France. Selected by Program Committee.
1. *"Five-Coloring Graphs on the Klein Bottle"*, 21st Cumberland Conference, May 15-17, 2008, Vanderbilt University, Nashville, TN, USA.

Seminar Presentations

52. London School of Economics, Combinatorics, Games and Optimization Seminar, December 2020.
51. Shanghai Center for Mathematical Sciences, Seminar, November 2020.
50. University of Illinois at Urbana-Champaign, Combinatorics Seminar, November 2020.
49. Oxford University, Discrete Mathematics and Probability Seminar, October 2020.
48. Institute for Basic Science (South Korea), Virtual Discrete Mathematics Colloquium, September 2020.
47. Extremal and Probabilistic Combinatorics Webinar, September 2020.
46. University of Waterloo, Tutte Colloquium, September 2020.
45. University of Waterloo, Graphs and Matroids Seminar, March 2020.
44. Ryerson University, Mathematics Department Colloquium, November 2019.
43. Center for Computing Science (Maryland, US), Colloquium, November 2019.
42. Carnegie Mellon University, ACO Seminar, October 2019.
41. University of Waterloo, Tutte Colloquium, March 2019.
40. University of Waterloo, Undergraduate Research Seminar, June 2018.
39. University of Warwick, November 2017.
38. University of Birmingham, November 2017.
37. Oxford University, November 2017.
36. University of Bordeaux, Graph Theory Seminar, September 2017.
35. University of Waterloo, Graph Theory Seminar, April 2017.
34. University of Waterloo, Tutte Colloquium, March 2017.
33. University of Illinois at Urbana-Champaign, Combinatorics Seminar, Sep 2016.
32. University of Waterloo, Undergraduate Research Seminar, May 2016.

31. University of Waterloo, Graph Theory Seminar, May 2016.
30. Iowa State University, Discrete Mathematics Seminar, April 2016.
29. Georgia Tech, Graph Theory Seminar, March 2016.
28. University of Waterloo, Graph Theory Seminar, February 2016.
27. University of Waterloo, Grad Student Seminar, November 2015.
26. University of Waterloo, Tutte Colloquium, November 2015.
25. Denmark Technical University, Graph Theory Seminar, April 2015.
24. Georgia Tech, Graph Theory Seminar, April 2015.
23. Princeton University, Discrete Mathematics Seminar, February 2015.
22. University of Waterloo, Graph Theory Seminar, October 2014.
21. Emory University, Combinatorics Seminar, October 2013.
20. University of Waterloo, Tutte Colloquium, September 2013.
19. University of Hamburg, Graph Theory Seminar, June 2013.
18. Clemson University, Algebra and Discrete Math Seminar, April 2013.
17. Louisiana State University, Combinatorics Seminar, March 2013.
16. University of Waterloo, Tutte Colloquium, January 2013.
15. Georgia Tech, Graph Theory Seminar, January 2013.
14. Georgia Tech, ACO Student Seminar, April 2012.
13. Emory University, Combinatorics Seminar, January 2012.
12. University of Illinois at Chicago, Combinatorics Seminar, October 2011.
11. University of Illinois at Urbana-Champaign, Combinatorics Seminar, October 2011.
10. Vanderbilt University, Combinatorics Seminar, October 2011.
9. Masaryk University (Brno, Czech Republic), Computer Science Seminar, May 2011.
8. Charles University (Prague, Czech Republic), Combinatorics Seminar, May 2011.
7. Georgia Tech, Graph Theory Seminar, February 2011.
6. Georgia Tech, Combinatorics Seminar, January 2011.
5. Georgia Tech, Graph Theory Seminar, September 30, 2010.
4. Georgia Tech, Graph Theory Seminar, September 2, 2010.
3. Charles University (Prague, Czech Republic), Combinatorics Seminar, November 2009.
2. Georgia Tech, ACO Student Seminar, April 2009.
1. Georgia Tech, Graph Theory Seminar, September 2008.

Teaching Experience

Courses Taught at University of Waterloo

15. CO 642, Graph Theory, Fall 2021.
14. CO 739, Probabilistic Methods, Winter 2021.
13. CO 642, Graph Theory, Fall 2020.
12. Math 239, Introduction to Combinatorics, Fall 2020.
11. CO 749, Graph Coloring, Winter 2020.
10. CO 749, Graph Decompositions, Winter 2019.
9. Math 239, Introduction to Combinatorics, Fall 2018.
8. CO 749, Graph Coloring, Winter 2018.
7. Math 239, Introduction to Combinatorics, Winter 2017.
6. CO 342, Graph Theory, Fall 2016.
5. CO 342, Graph Theory, Spring 2016.
4. Math 239, Introduction to Combinatorics, Winter 2016.
3. CO 642, Graph Theory, Fall 2015.
2. CO 749, Advanced Techniques in Graph Coloring, Winter 2015.
1. Math 239, Introduction to Combinatorics, Fall 2014.

Courses Taught at Emory University

- Calculus I for Life Science Majors: Fall 2012, Spring 2014.
- Calculus III, Multivariable: Spring 2013 (2 sections), Fall 2014, Spring 2014.