

EMPLOYMENT AND EDUCATION

- 2019– Postdoc working with Dan Král', Masaryk University, Brno, Czech Republic *from April*.
Topics: Graph limits and first order logic
- 2017–2019 Postdoc working with Cecilia Holmgren, Uppsala University, Sweden *until March*.
Topics: Galton–Watson trees and split trees
- 2015–2017 Heilbronn Research Fellow, Bristol University.
- 2011–2016 *Doctor of Philosophy*, Oxford University.
Thesis **Modularity of Networks**,
Supervisor: Prof. Colin McDiarmid
★ Corcoran Prize for the best thesis in the Oxford Statistics Department 2015–2016.
- 2004–2010 *Bachelor of Philosophy in Mathematics*, Australian National University.
First Class Honours, 92%.
Thesis **Degree Sequences of Random Bipartite Graphs**,
Supervisors: Prof. Brendan McKay, Dr. Judy-Anne Osborn.

PUBLICATIONS AND SUBMITTED MANUSCRIPTS

- 10. **Embedding small digraphs and permutations in binary trees and split trees**, with M. Albert, C. Holmgren, and T. Johansson, *invited to special issue of Algorithmica for Analysis of Algorithms 2018*, currently under review, [arXiv:1901.02328](https://arxiv.org/abs/1901.02328).
- 9. **Random tree recursions: which fixed points correspond to tangible sets of trees?**, with M. Podder and T. Johnson, [arXiv:1808.03019](https://arxiv.org/abs/1808.03019).
- 8. **Modularity of Erdős–Rényi random graphs**, with C. McDiarmid, [arXiv:1808.02243](https://arxiv.org/abs/1808.02243).
- 7. **The parameterised complexity of computing the maximum modularity of a graph**, with K. Meeks, *invited to special issue of Algorithmica for IPEC 2018*, currently under review, [arXiv:1807.06965](https://arxiv.org/abs/1807.06965).
- 6. **k -cuts on paths and some trees**, with X. Cai, L. Devroye and C. Holmgren, [arXiv:1804.03069](https://arxiv.org/abs/1804.03069).
- 2019+ 5. **Inversions in split trees and conditional Galton–Watson trees**, with X. Cai, C. Holmgren, S. Janson and T. Johansson, *Combinatorics, Probability and Computing*, to appear, link [arXiv:1709.00216](https://arxiv.org/abs/1709.00216).
- 2018 4. **Modularity of regular and treelike graphs**, with C. McDiarmid, *Journal of Complex Networks* **6** 4 (2018) link [arXiv:1606.09101](https://arxiv.org/abs/1606.09101)
- 2017 3. **Guessing numbers of odd cycles**, with R. Atkins and P. Rombach *Electronic Journal of Combinatorics* **24** 1 (2017) link [arXiv:1602.03586](https://arxiv.org/abs/1602.03586)
- 2016 2. **Degree sequences of random digraphs and bipartite graphs**, with B. D. McKay *Journal of Combinatorics* **7** 1 (2016) pp.21–49 link [arXiv:1302.2446](https://arxiv.org/abs/1302.2446)
- 2015 1. **Avoider–Enforcer Star Games**, with A. Grzesik, M. Mikalački, Z. Nagy, A. Naor, B. Patkós *Discrete Mathematics and Theoretical Computer Science* **17** 1 (2015) pp.145–160 link [arXiv:1302.2555](https://arxiv.org/abs/1302.2555)

CONFERENCE PUBLICATIONS AND SUBMISSIONS

- c7. **k -cuts on a path**, with X. Cai, L. Devroye and C. Holmgren *Algorithms and Complexity - 11th International Conference, CIAC 2019, Rome, Italy, May 27-29, 2019, Proceedings. (CIAC 2019)* [link](#)
- c6. **The parameterised complexity of computing the maximum modularity of a graph**, with K. Meeks *accepted to 13th International Symposium on Parameterized and Exact Computation (IPEC 2018)* [link](#)
- c5. **Modularity of Erdős-Rényi graphs**, with C. McDiarmid, *Proceedings of the 27th International Conference on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms (AofA 2018)* [link](#)
- c4. **Permutations in binary trees and split trees**, with M. Albert, C. Holmgren and T. Johansson (*AofA 2018*) [link](#)
- c3. **Inversions in split trees and conditional Galton–Watson trees**, with X. Cai, C. Holmgren, S. Janson and T. Johansson (*AofA 2018*) [link](#)
- c2. **Avoider-Enforcer Star Games**, with A. Grzesik, M. Mikalački, Z. Nagy, A. Naor, B. Patkós *The seventh European conference on combinatorics, graph theory and applications Pisa, Italy, September 9–13, 2013 (Eurocomb 2013)* [link](#)
- c1. **Modularity in random regular graphs and lattices** with C. McDiarmid, *Proceedings of Erdős Centennial, Electronic Notes in Disc. Math.* **43** (2013) [link](#)

INVITED CONFERENCE TALKS

- Nov, 2018 *Permutations in Random Trees*, Dagstuhl Seminar: Genomics, Pattern Avoidance, and Statistical Mechanics
- Apr, 2017 *Modularity of Random Graphs*, Workshop on Random Graphs and Random Processes, Kings College London, UK.
- Mar, 2016 *Modularity of Random Graphs*, ICMS Complex Networks, Edinburgh, UK.

SEMINARS

- Mar, 2019 *Modularity of Networks*, University of Bergen, Norway.
- Dec, 2018 *Guessing numbers of odd cycles*, Queen Mary Combinatorics Study Group, UK.
- Apr, 2018 *Modularity of Random Graphs*, Stockholm University, Sweden.
- Mar, 2018 *Tree automata on Galton-Watson trees*, KTH, Stockholm, Sweden.
- Mar, 2017 *Modularity of Random Graphs*, Seminar, Lancaster University, UK.
- Jan, 2017 *Modularity of Random Graphs*, Seminar, Uppsala University, Sweden.
- Nov, 2016 *Modularity of Random Graphs*, Combinatorics Seminar, UNSW, Australia.
- Oct, 2016 *Modularity of Random Graphs*, Computer Science Seminar, Glasgow University, UK.
- Oct, 2016 *Modularity of Random Graphs*, Pure Math. Seminar, Royal Holloway, UK.
- May, 2016 *Modularity of Random Graphs*, Combinatorics Seminar, Birmingham University, UK.
- Mar, 2016 *Network Coding*, Information Theory Seminar, University of Bristol, UK.
- Nov, 2015 *Modularity of Random Graphs*, Combinatorics Seminar, University of Bristol, UK.
- Nov, 2014 *Modularity on Random Graphs and on Lattices*, Combinatorics Seminar, University of Warwick, UK.

CONFERENCE TALKS AND PRESENTATIONS

- Feb, 2019 *Random tree recursions: which fixed points correspond to tangible sets of trees?*, Winter Combinatorics meeting, Open University, UK.
- Jan, 2019 *Random tree recursions: which fixed points correspond to tangible sets of trees?*, Probabilistic Midwinter meeting, Umea University, Sweden.
- Sep, 2018 *Permutations in binary trees and split trees*, Polish Combinatorics Conference, Bedlewo,
- Jun, 2018 *Permutations in binary trees and split trees*, Analysis of Algorithms, Uppsala, Sweden.
- Jun, 2018 *Permutations in binary trees and split trees*, Stochastic Processes Conference, Gothenburg, Sweden.
- Aug, 2017 *Modularity of Random Graphs*, Random Structures and Algorithms, Gniezno, Poland.
- Jul, 2017 *Inversions in random labellings of trees*, British Combinatorial Conference, Glasgow.
- Jun, 2017 *Inversions in random labellings of trees*, Permutation Patterns, Reykjavik, Iceland.
- Jun, 2017 *Guessing numbers of odd cycles*, Graphs, Hypergraphs and Set Systems, Umea, Sweden.
- Jan, 2017 *Modularity of Random Graphs*, Probabilistic Midwinter meeting, Umea, Sweden
- Sep, 2016 *Guessing numbers of odd cycles*, Polish Combinatorics Conference, Bedlewo, Poland.
- Jun, 2016 *Modularity of Random Graphs*, Probabilistic Combinatorics Downunder, Melbourne.
- Jun, 2016 *Modularity of Random Graphs*, SIAM Conference on Discrete Math, Atlanta, USA.
- Jul, 2015 *Modularity of Networks*, British Combinatorial Conference, University of Warwick
- Apr, 2015 *Modularity of Networks*, Scottish Combinatorics Meeting, Glasgow.
- Aug, 2013 *Modularity in random regular graphs and lattices*, Random Structures and Algorithms, Poznan, Poland.
- July, 2013 *Modularity, edge expansion and lattices*, poster Erdős Centennial, Budapest, Hungary.
- Jun, 2013 *Concentration inequalities via reservoir sampling algorithm*, Young Women in Discrete Mathematics, Bonn.
- Aug, 2012 *Degree sequences in random bipartite graphs*, British Postgraduate Combinatorics Conference, University of Warwick.
- Mar, 2012 *Concentration inequalities via reservoir sampling algorithm*, Miniconference during Block Course: Extremal Combinatorics in Random Discrete Structures, Berlin.
- Dec, 2010 *Row and column sums of random 0-1 matrices*, Australasian Conf. on Combinatorial Math. & Combinatorial Comp. (ACCMCC), Canberra.

SELECTED WORKSHOPS AND CONFERENCES

- Mar, 2018 *McGill Probability and Combinatorics Workshop*, Bellairs Institute, Barbados.
- Oct, 2017 *Dynamics on Random Graphs and Random Maps*, CIRM Marseille, France.
- May, 2017 *Techniques in Random Discrete Structures*, University of Athens, Greece.
- Dec, 2016 *Algorithms, Logic and Structure*, University of Warwick, UK.
- Aug, 2016 *Prague Discrete Summer School on Discrete Math.*, Czech Academy of Sciences.
- Jul, 2016 *Sao Paulo School of Algorithms Combinatorics and Optimization*, Brazil.
- Jul, 2015 *Regularity and Analytic Methods in Combinatorics*, University of Warwick, UK.
- Jul, 2014 *Extremal Combinatorics*, ICMS Edinburgh, UK.
- Feb, 2014 *French-British Workshop on Random Graphs*, Paris, France
- Jan, 2014 *Stochastic Activity Month: Probability and Graphs*, TU Eindhoven, Netherlands.
- Sep, 2013 *Phase Transition in Random Discrete Structures*, TU Graz, Austria
- Aug, 2013 *Random Graphs, Geometry and Asymptotic Structure*, Birmingham, UK
- Jul, 2013 *Cornell Probability School*, Cornell University, USA
- Jun, 2013 *School of Graph Theory SGT2013*, Oléron, France.
- Nov, 2012 *STAR Workshop on Random Graphs*, University of Utrecht, Netherlands
- Sep, 2012 *French-British Workshop on Analytic Combinatorics*, Oxford, UK
- Aug, 2012 *4th Emlektabla Workshop on Positional Games*, Budapest, Hungary
- Mar, 2012 *Block Course: Extremal Combinatorics Random Discrete Structures*, Berlin, Germany

RESEARCH VISITS (≥ 2 WEEKS)

- Jan-Mar, 2018 *Uppsala University*, Sweden visiting Cecilia Holmgren.
Apr, 2017 *Courant Institute*, New York visiting Joel Spencer.
Oct-Nov, 2014 *University of Warwick*, Coventry visiting Dan Král'.

TEACHING AND ADMISSIONS

ALEA Young workshop

- 2019 Lecturing, *Probabilistic Methods in Graph Theory* short course for PhD students at ALEA Young 2019 workshop in Caen, France (upcoming).

Bristol University

- 2016 Lecturing, *Topics in discrete mathematics: Boolean Functions* (3rd/4th year).

Oxford University - Statistics Department

- 2011-4 Tutoring Assistant, *Applied Probability* (3rd year).
2012-4 Tutoring Assistant, *Statistical Lifetime Models* (3rd year).
2012 Tutoring Assistant, *Linear Programming* (2nd year).

Oxford University - Mathematical Institute

- 2014 Tutor, *Probabilistic Combinatorics* (3rd year).
2013 Tutoring Assistant, *Probabilistic Combinatorics* (3rd year).
2012 Tutor, *Graph Theory* (3rd year). Tutoring Assistant, *Combinatorics* (4th year).
2011-2 Tutoring Assistant, *Graph Theory* (3rd year).

Oxford University First Year Collegiate Classes

- 2014-5 St Hughes College, *Optimisation*.
2015 Hertford College, *Graph Theory*.
2012 Somerville College, *Linear Algebra*.

Oxford University Undergraduate Admissions

- 2014-5 Assistant interviewer, St Hughes College.

Australian National University - Mathematics Department

- 2008, 2010 Tutor, *Mathematics and Applications Honours* (1st year)
2008 Tutor, *Mathematics and Applications 2 Honours* (1st year)
2008 Tutor, *Games, Graphs and Machines* (2nd year)

OUTREACH/COMMUNITY MATHEMATICS AND SCIENCE

- 2018 Talk: *Community Structure in Networks*, talk in the Matematikseminariet series for undergraduate students, Uppsala University, Sweden
2018 Talk: *Community Structure in Networks*, Uppsala University Maths Club, Sweden
2009-13, 2015 Tutor, *National Mathematics Summer School* (NeMeSiS), Australia
2010 Talk: *Soccer, Bucky Balls & Euler Number*, Australian National University Math Day

SCHOLARSHIPS AND AWARDS

- 2017 Corcoran Prize for the best thesis Oxford Statistics Department 2015-2016.
- 2016 G-Research second prize for thesis in quantitative methods.
- 2014 Half Blue, Kayaking, Oxford University.
- 2014 Balliol College 750th Anniversary Science Prize, Oxford.
- 2011-2015 Statistics Department Teaching Bursary, DPhil Scholarship, Oxford University.
- 2011 J. Crawford Prize for best female thesis in the Sciences, Australian National University.
- 2004-2010 National Undergraduate Scholarship, Australian National University
- 2004 Best Student Seminar, Advanced Physics I, Australian National University
- 2003,4 A. L. Blakers memorial prize, Australian National Mathematics Summer School
- 2003 Australian Students Prize and Ipswich Youth of the Year, Australia.

GRANTS

- 2019 Travel grant from the Lisa and Carl-Gustav Esseens foundation Lisa och Carl-Gustav Esseens stiftelse (11000 SEK/1100 EUR).
- 2018 Part of working group led by Prof. David Sumpter to write the successful application for a new position at Uppsala University as part of the Wallenberg foundation Artificial Intelligence programme. Contribution: 1 page description of possible research problem 'fundamental limits of learning'.
- 2018 Travel grant from the Lisa and Carl-Gustav Esseens foundation Lisa och Carl-Gustav Esseens stiftelse (10000 SEK/1000 EUR).
- 2018 Travel grant (11000 SEK/1100 EUR) from Stiftelsen G S Magnusons fund awarded by the Royal Swedish Academy of Science.
- 2017 Heilbronn Collaboration Grant (2000 GBP).

REFEREES

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|------------------------|---|
| DPhil.
Supervisor | Prof. Colin McDiarmid, Dept. of Statistics, Oxford University.
cmcd@stats.ox.ac.uk |
| Networks
Expertise | Prof. Mason Porter, Dept. of Mathematics, UCLA.
mason@math.ucla.edu |
| Honours
Supervisor | Prof. Brendan McKay, Dept. of Computer Science, Australian National University.
bdm@cs.anu.edu.au |
| Teaching
Experience | Lecturer. Julia Wolf, Centre for Mathematical Sciences, Cambridge University.
julia.wolf@dpmms.cam.ac.uk |