Fiona Skerman

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Employment and Education

2019–	Postdoc working with Prof. Dan Král', Masaryk University, Brno, Czech Republic.
2017–2019	Postdoc working with Docent Cecilia Holmgren, Uppsala University, Sweden.
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.

Scholarships and awards

2017	Corcoran Prize for the best thesis Oxford Statistics Department 2015-2016.
2016	G-Research second prize for Oxford thesis in quantitative methods ∼£5000.
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.

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.
	9.	**Random tree recursions: which fixed points correspond to tangible sets of trees?**, with M. Podder and T. Johnson, *submitted,* arXiv:1808.03019.
	8.	**The parameterised complexity of computing the maximum modularity of a graph**, with K. Meeks, *invited to special issue of Algorithmica for International Symposium on Parameterized and Exact Computation 2018, currently under review,* arXiv:1807.06965.
2019+	7.	**Modularity of Erdős-Rényi random graphs**, with C. McDiarmid, *Random Structures and Algorithms: tentatively accepted,* arXiv:1808.02243.
2019	6.	**k-cuts on paths and some trees**, with X. Cai, L. Devroye and C. Holmgren, *Electronic Journal of Probability* **24** (2019) arXiv: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* **28** 3 (2019) link arXiv:1709.00216.
2018	4.	**Modularity of regular and treelike graphs**, with C. McDiarmid, *Journal of Complex Networks* **6** 4 (2018) link arXiv: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
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
2015	1.	**Avoider-Enforcer Star Games**, with A. Grzesik, M. Mikalački, Z. Nagy, A. Naor, B. Patkós *Dicrete Mathematics and Theoretical Computer Science* **17** 1 (2015) pp.145-160 link arXiv: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, Germany.
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

Jun, 2019	*Community structure in Networks: limits of learning*, Groningen Stochastics Seminar, NDL.
Mar, 2019	*Modularity of Networks*, University of Bergen, Norway.
Dec, 2018	*Guessing numbers of odd cycles*, Queen Mary Combinatorics Study Group, UK.
Sep, 2018	*Introduction to Modularity*, Computer Science Reading Group, Glasgow University, 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, 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, Australia.

Jun, 2016   *Modularity of Random Graphs*, SIAM Conference on Discrete Math, Atlanta, USA.

Jul, 2015   *Modularity of Networks*, British Combinatorial Conference, University of Warwick, UK.

Apr, 2015   *Modularity of Networks*, Scottish Combinatorics Meeting, Glasgow, UK.

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 resevoir sampling algorithm*, Young Women in Discrete Mathematics, Bonn, Germany.

Aug, 2012   *Degree sequences in random bipartite graphs*, British Postgraduate Combinatorics Conference, University of Warwick, UK.

Mar, 2012   *Concentration inequalities via reservoir sampling algorithm*, Miniconference during Block Course: Extremal Combinatorics in Random Discrete Structures, Berlin, Germany.

Dec, 2010   *Row and column sums of random 0-1 matrices*, Australasian Conf. on Combinatorial Math. & Combinatorial Comp. (ACCMCC), Canberra, Australia.

SELECTED WORKSHOPS AND CONFERENCES

Apr, 2019   *McGill Probability and Combinatorics Workshop*, Bellairs Institute, Barbados.

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 Cominatorics*, 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

Sep, 2012   *Polish Combinatorics Conference*, Bedlewo, Poland

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, *Phase transitions in Random Graphs* short course for PhD students and early career researchers at ALEA Young 2019 workshop in Caen, France.

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

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

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
Teaching Experience	Lecturer. Julia Wolf, Centre for Mathematical Sciences, Cambridge University. julia.wolf@dpmms.cam.ac.uk