Ewan Davies

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Positions

Simons Institute for the Theory of Computing **Berkeley, California, USA**
Visiting scholar for *Geometry of Polynomials* program January 2019 – May 2019

University of Amsterdam (UvA) **Amsterdam, Netherlands**
Postdoc in the *AFMIDMOA* group of Prof. Lex Schrijver October 2017 – December 2018

Education

London School of Economics and Political Science (LSE) **London, UK**
Ph.D. Mathematics October 2013 – September 2017
Thesis title: *Extremal and probabilistic results for regular graphs*
Supervisors: Prof. Jozef Skokan, Dr. Peter Allen

Jesus College, University of Cambridge **Cambridge, UK**
M.Math. Mathematics, Distinction September 2012 – June 2013
B.A. (Hons) Mathematics, First Class September 2009 – June 2012

Research Interests

Extremal and probabilistic combinatorics, graphs, Gibbs measures, statistical physics, approximation algorithms, hypergraphs, Ramsey theory

Awards and Grants

2016	Jan	**Santander Scholarship**, Santander Travel Research Fund at LSE	
2015	Oct	**Cyril Offord Trust Award**, London School of Economics	
2014	Jul	**Mathematics Department New Teacher Prize**, London School of Economics	
2013	Sep	**Ph.D. Studentship**, London School of Economics	
	Jun	**Foundation Scholarship and R.A. Watchman Prize**, Jesus College, Cambridge	
		for top results in Part III Mathematics examinations	
2012	Jun	**Foundation Scholarship and Sir Harold Spencer Jones Prize**, Jesus College, Cambridge	
		for top results in Part II Mathematics examinations	
2011	Jun	**Foundation Scholarship and Ware Prize**, Jesus College, Cambridge	
		for top results in Part IB Mathematics examinations	
2010	Jun	**Foundation Exhibition and Bronowski Prize**, Jesus College, Cambridge	
		for top results in Part IA Mathematics examinations	

Papers

Submitted

[12] P. Allen, E. Davies, and J. Skokan. Regularity inheritance in hypergraphs (2019). arXiv: 1901.05955.

[11] E. Davies, R. de Joannis de Verclos, R. J. Kang, and F. Pirot. Occupancy fraction, fractional colouring, and triangle fraction (2018). arXiv: 1812.11152.

[10] F. Bencs, E. Davies, V. Patel, and G. Regts. On zero-free regions for the anti-ferromagnetic Potts model on bounded-degree graphs (2018). arXiv: 1812.07532.

[9]   E. Davies, R. de Joannis de Verclos, R. J. Kang, and F. Pirot. Colouring triangle-free graphs with local list sizes (2018). arXiv: `1812.01534`.

Journal publications

[8]   E. Davies. Counting proper colourings in 4-regular graphs via the Potts model. *Electronic Journal of Combinatorics* 25.4 (2018), P4.7. arXiv: `1801.07547`. URL: `https://www.combinatorics.org/ojs/index.php/eljc/article/view/v25i4p7`.

[7]   E. Davies, M. Jenssen, W. Perkins, and B. Roberts. Tight bounds on the coefficients of partition functions via stability. *Journal of Combinatorial Theory Series A* 160 (2017), 1–30. DOI: `10.1016/j.jcta.2018.06.005`. arXiv: `1704.07784`.

[6]   E. Davies, M. Jenssen, W. Perkins, and B. Roberts. Extremes of the internal energy of the Potts model on cubic graphs. *Random Structures & Algorithms* 53.1 (2018), 59–75. DOI: `10.1002/rsa.20767`. arXiv: `1610.08496`.

[5]   E. Davies, M. Jenssen, W. Perkins, and B. Roberts. On the average size of independent sets in triangle-free graphs. *Proceedings of the American Mathematical Society* 146 (2018), 111–124. DOI: `10.1090/proc/13728`. arXiv: `1606.01043`.

[4]   E. Davies, M. Jenssen, and B. Roberts. Multicolour Ramsey numbers of paths and even cycles. *European Journal of Combinatorics* 63 (2017), 124–133. DOI: `10.1016/j.ejc.2017.03.002`. arXiv: `1606.00762`.

[3]   E. Davies, M. Jenssen, W. Perkins, and B. Roberts. Independent Sets, Matchings, and Occupancy Fractions. *Journal of the London Mathematical Society* 96 (2017), 47–66. DOI: `10.1112/jlms.12056`. arXiv: `1508.04675`.

Conference publications

[2]   E. Davies, M. Jenssen, W. Perkins, and B. Roberts. Tight bounds on the coefficients of partition functions via stability (extended abstract). *Electronic Notes in Discrete Mathematics* 61 (2017), 317–321. DOI: `10.1016/j.endm.2017.06.054`.

[1]   E. Davies. Counting in hypergraphs via regularity inheritance (extended abstract). *Electronic Notes in Discrete Mathematics* 49 (2015), 413–417. DOI: `10.1016/j.endm.2015.06.058`.

Talks

Conferences and workshops

2018	Aug	Algorithmic and Combinatorial Aspects of Partition Functions	Amsterdam, Netherlands
	Mar	Workshop on Graph Limits in Bohemian Switzerland	Janov, Czechia
2017	Aug	European Conference on Combinatorics, Graph Theory and Applications (EUROCOMB 2017)	Vienna, Austria
	May	Two one-day Colloquia in Combinatorics, LSE (invited)	London, UK
2016	Aug	Student Combinatorics Day (invited)	Birmingham, UK
2015	Aug	European Conference on Combinatorics, Graph Theory and Applications (EUROCOMB 2015)	Bergen, Norway
	Jul	Novi Sad Workshop on Foundations Of Computer Science	Novi Sad, Serbia
	Apr	Postgraduate Combinatorial Conference, QMUL	London, UK
2014	Jul	SUMMIT 190: Balogh, Csaba, Hajnal, and Pluhar are 190 (invited)	Szeged, Hungary

Seminars

2018	May	Applied Stochastics Seminar, Radboud University	Nijmegen, Netherlands
	Jan	Discrete Mathematics Seminar, KdVI / CWI	Amsterdam, Netherlands
2017	Oct	Discrete Mathematics Seminar, KdVI / CWI	Amsterdam, Netherlands

	Feb	Combinatorics Seminar	Oxford, UK
	Feb	Discrete Mathematics Seminar, KdVI / CWI	Amsterdam, Netherlands
	Jan	PhD Seminar on Combinatorics, Games and Optimisation, LSE	London, UK
2016	Apr	Seminário de Teoria da Computação, Combinatória e Otimização	São Paulo, Brazil
2015	Nov	Discrete Geometry and Combinatorics Seminar, UCL	London, UK
	Oct	Mathematics Lunchtime Seminar, LSE	London, UK
	Apr	Combinatorics Seminar, Freie Universität	Berlin, Germany
2013	Nov	Mathematics Lunchtime Seminar, LSE	London, UK

Research Visits

2018	Feb	**Instituto Nacional de Matemática Pura e Aplicada**	
		Graphs and Randomness Workshop	Rio de Janeiro, Brazil
2016	Apr	**Universidade de São Paulo**, Departamento de Ciência da Computação	
		with Yoshiharu Kohayakawa	São Paulo, Brazil
	Mar	**Instituto Nacional de Matemática Pura e Aplicada**	
		with Rob Morris	Rio de Janeiro, Brazil
2015	Sep	**Group Workshop**, Institute of Mathematics, Freie Universität Berlin	
		with Tibor Szabó	Děčín, Czech Republic

Schools

2015	Jul	**Regularity and Analytic Methods in Combinatorics**	
		University of Warwick	Coventry, UK
2014	Jun	**Budapest Summer School in Discrete Mathematics**	
		Eötvös Loránd University	Budapest, Hungary

Teaching

2018	**Representation Theory**, teaching assistant, exam setting, and exam marking	UvA
	Algebraic Methods in Combinatorics, seminar teaching assistant	UvA
2016	**Mathematics Support Centre**, one-to-one tuition in a variety of courses	LSE
2015	**Mathematics Support Centre**, one-to-one tuition in a variety of courses	LSE
	Real Analysis (MA203), class teacher for 2 groups of 15 students	LSE
2014	**Graph Theory (MA316)**, class teacher for 1 group of 15 students	LSE
	Further Mathematical Methods (MA212), class teacher for 3 groups of 15 students	LSE
2013	**Mathematical Methods (MA100)**, class teacher for 3 groups of 15 students	LSE

Academic Service

Peer review

Combinatorica, European Journal of Combinatorics, Journal of Graph Theory

Other Experience

Athena Swan Assessment Team Member, London School of Economics and Political Science	Jan 2016
Green Impact Team Member, London School of Economics and Political Science	Sep 2015
Intern, NRICH Project, University of Cambridge	Jun 2012
Volunteer Mathematics Tutor, STIMULUS, Fen Ditton Community Primary	Oct 2011