



School of Mathematics Newsletter

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Kay Magaard

Kay left the School at the end of the 2016-17 academic year after a decade in Birmingham to take up a professorship in Arizona. For the first few months of this year he was at the MSRI taking part in the research programme on representation theory. He also travelled extensively continuing and forming research collaborations in Africa, India and Germany.

Kay died suddenly July 26, 2018 in Toronto, Canada. The School shares sympathy with his wife Terrie, two children Lorenz and Carlo and his parents Lorenz and Ursula.

Kay was brought up in Honolulu and studied in Germany and the USA. He was an international research leader recognised for his contributions to finite group theory and representation theory. He wrote joint papers with Simon Goodwin, Corneliu Hoffman, Chris Parker and Sergey Shpectorov; David Craven regularly took advantage of Kay's extensive knowledge on the subgroups of exceptional groups.

Though Kay had left the School, his friendships and collaborations continued. We will miss him dearly.

His mathematical legacy will live on through his works.

David, Chris, Hoff, Sergey, Simon

Representations of groups and Hecke algebras: A conference in memory of Anton Evseev

by SIMON GOODWIN

Colleagues and friends of our former colleague Anton Evseev gathered for a conference in his memory in September. There were talks on a range of topics in which Anton's research has had an impact including talks by his collaborators and his former PhD students. Many tributes were made to Anton's enthusiasm for research, and collaborators shared stories about how much they enjoyed working with him. A colloquium talk on "Representations of finite groups" was given by Gunter Malle, which gave an overview of the status of a number of conjectures in modular representation theory, and pointed out areas where Anton's research had contributed. This was followed by a drinks reception and a conference dinner. The conference was closed by Chris Parker commenting on how he thought Anton would have enjoyed the conference, and how it was a fitting tribute.



Dr Anton Evseev

Farewell Tracy and Janette

by ANDREW TREGLOWN

After 10 years of dedicated service, Tracey Nesbitt has recently left the School. Janette Lowe is also leaving after 22 years in the department. Both will be sincerely missed by their colleagues.

Janette in particular has helped hundreds of graduate students within the School of Mathematics, and has seen many of those students move on to lectureships here in Birmingham. During her time at the University a widespread convention was adopted; if in doubt, “ask Janette”! With the departure of Tracey and Janette so to leaves a great deal of experience and knowledge. Thank you both for all your help over the years!

New staff

Dr Andrea Brini (PhD SISSA Trieste, 2009) joined the School of Mathematics in September as a Senior Lecturer in the Geometry and Mathematical Physics group. His past appointments include post-doctoral stints at Geneva, Imperial College (twice, first as a Marie Curie Fellow) and a permanent research position at CNRS in France. He is a mathematician with broad interests in Geometry (particularly Algebraic Geometry), Topology and Mathematical Physics: his main research topic is the theory of topological strings and Gromov–Witten invariants, with emphasis on its connections with gauge theory, matrix models, integrable systems, and other moduli space problems. Andrea’s research will be supported by a five-year EPSRC fellowship starting in October awarded for his project ‘Quantum curves, mirror symmetry and integrable systems’ (2018-2023).

Joining the same group is Dr Tyler Kelly. Tyler was a Research Fellow at Cambridge, funded by the NSF and EPSRC, after obtaining a PhD and BS at the Universities of Pennsylvania and Georgia respectively. Tyler has broad research interests typically centred in Algebraic Geometry, Landau-Ginzburg models and Mirror Symmetry.

Dr Johannes Carmesin is a new Birmingham Fellow in the School. He is particularly interested in Graph Minors, Connectivity and Matroids. Recently he characterised the simply connected 2-complexes embeddable in 3-space – in a way similar to Kuratowski’s characterisation of graph planarity.

Dr Richard Montgomery joined the School of Mathematics in April this year as a Birmingham Fellow, returning to Birmingham after a brief time here as a postdoc in 2015. Richard works in combinatorics, primarily in random and extremal graph theory. He received his PhD from the University of Cambridge in 2015 under the supervision of Andrew Thomason.



Dr Tony Samuel

Dr Tony Samuel joined the University of Birmingham this August as part of the Jinan flying faculty. His research interests include aperiodic order, Diophantine approximations, dynamical systems, ergodic theory, geometry (fractal, hyperbolic and non-commutative) and Markov chains. Recently, his focus has been on applications of ergodic theory, non-commutative geometry and potential theory to fractals and quasicrystals.

Together with Chris Good and Rob Leek, he is keen to build a lively and active Dynamical Systems and Topology research group which is pace setting in its international research. Indeed, his first step in this direction has been to add the University of Birmingham to the LMS Ergodic Theory network; other partner universities include the University of Bristol, University of Exeter, Loughborough University, University of Manchester, Queen Mary University of London, University of St Andrews, University of Surrey and University of Warwick.

Tony completed his PhD in 2011 under the supervision of Prof. Kenneth Falconer FRS (University of St Andrews, Scotland) and Prof. Bernd Stratmann



Dr Johannes Carmesin, Dr Andrea Brini and Dr Jingyu Huang

(University of Bremen, Germany). Subsequently, Tony was awarded an EPSRC Doctoral Fellowship and has worked as a Postdoctoral Fellow at the Australian National University. He has held posts at the University of Bremen as a Scientific Researcher (Wissenschaftlicher Mitarbeiter) and California Polytechnic State University as an Assistant Professor.

Dr Hong Duong was appointed as a lecturer in mathematical statistics in July 2018. Previously, he was a Chapman Fellow at Imperial College London and a research fellow at the University of Warwick. He defended his PhD in September 2014 jointly between the University of Bath and Eindhoven University of Technology. Hong's research interests lie in the intersections of analysis and applied probability. Most of his research is inspired from applications in molecular dynamics, material sciences and biological systems. Specifically, he has been working on analysis of partial differential equations and interacting particle systems. Recently, he is also interested in establishing links between evolutionary game theory and random polynomial theory. He is a member of the Jinan team in the School delivering teaching in the Jinan—Birmingham dual degree undergraduate programmes.

Dr Jingyu Huang has also joined the School as part of the same team. He obtained his BS in Physics from Nanjing University in 2008 and his PhD from the University of Kansas in 2015. He has also held a postdoctoral fellowship at MSRI and was an As-

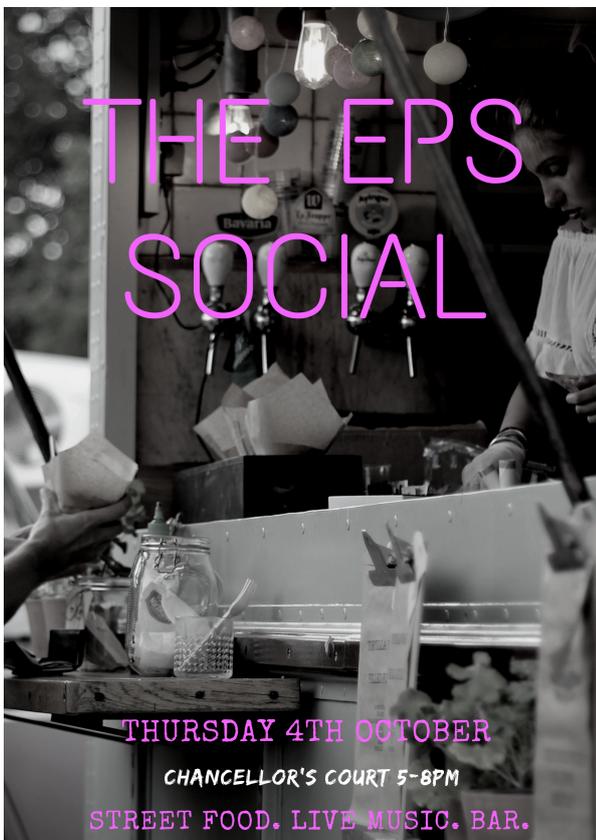
stant Professor/Lecturer at the University of Utah. Jingyu's research interests are Stochastic analysis, Stochastic partial differential equations, Malliavin calculus, fractional Brownian motions and random fractals.

Dr Arnaud Lionnet joins the School from a Research Fellowship at the ENS (Paris). Prior to that he has held positions at ESIA (Paris), INRIA (Paris) and Lady Margaret Hall, Oxford. He received his DPhil from Oxford and prior to that he was a student at the École Normale Supérieure de Lyon. Arnaud's research focuses on probabilistic numerical methods for partial differential equations and Mathematical Finance.

Claire Churchill joined the School of Mathematics in August as the Admissions and Outreach Officer, covering for Sally Schofield. After graduating from the University of Warwick Claire worked as a science teacher for a number of years before moving into the higher education sector. Claire has previously held roles related to STEM Outreach, widening participation, student recruitment and admissions at both the University of Reading and the London School of Economics (LSE). Claire's role within the School of Mathematics will include leading on UG admissions including open days, offer holder days and communication with applicants, and also managing the School's outreach activities and providing strategic oversight of outreach across the College.



Dr Hong Duong, Dr Tyler Kelly and Claire Churchill



Spanish mathematics prize for Birmingham alumnus

Dr David Beltran has been awarded the Vicent Caselles prize from the Spanish Royal Mathematical Society and the BBVA Foundation that recognises the outstanding research of early career Spanish mathematicians. David was awarded the prize for his contribution to ‘weighted inequalities for the Carleson

maximal operator’ and his ‘important results in the control of pseudo-differential operators related to the Hormander class for maximal functions’. David completed his PhD at the School of Mathematics in 2017 under the supervision of Jon Bennett and currently holds a postdoctoral position in the Basque Centre for Applied Mathematics in Bilbao. Congratulations, David!

Young Mathematicians Colloquium

by ALBERTO ESPUNY DÍAZ

Back in the Spring, the University of Birmingham held the third edition of the Young Mathematicians Colloquium, continuing with a tradition that started three years ago. This colloquium aims to bring together PhD students and young researchers in every area of mathematics from all across the UK and give them an opportunity to share their more recent discoveries and their impressions about academic life; it was a huge success, with over 70 registered participants and a total of 22 contributed talks and six invited speakers.

The talks of the colloquium were divided into parallel sessions, according to the areas the talks belonged to. Invited speakers were divided into pure and applied. After the registration, Kenneth Falconer (University of St Andrews) gave a talk on ‘Results and problems in fractal geometry’, while James Sprittles (University of Warwick) spoke on ‘Nanoscale free surface flows: modelling beyond Navier-Stokes-Fourier’. After lunch, Valentina Grazian (University of Aberdeen) and Daniel Jones

(INRIA and École Polytechnique, now Birmingham!) presented their talks entitled ‘I’m a fusion system, nice to meet you’ and ‘Tropical cellular automata - why urban fires propagate according to polyhedral balls’, respectively. Later, Annika Heckel (University of Oxford) and Fabian Spill (University of Birmingham) talked about ‘Colouring random graphs’ and ‘Uncovering the malignant interplay of geometrical, physical and molecular drivers of tumour progression through mathematical models’. Contributed speakers, coming from a total of twelve different universities, were divided into up to four parallel sessions throughout the day. In addition to the participants, many other members of the University attended several of the talks throughout the day.

The full day of talks was balanced with several coffee breaks, a long lunch break and a conference dinner at Jamie’s Italian. These gave the participants a chance to interact with one another, discuss the topics of the day and other topics of interest related to the academic life, and establish a network that will enable future collaborations.

The colloquium was organised by a group of our own PhD students: Alexander Brune, Padraig Condon, Alberto Espuny Díaz and Joel Mitchell. The organisation has received funding from the University of Birmingham (via the Postgraduate Development Fund) and the MAGIC group.

Harmonic Analysis and PDE Day

by ALESSIO MARTINI AND SEBASTIANO NICOLUSSI GOLO

On Tuesday 11 September a ‘Harmonic Analysis and PDE Day’ took place at the University of Birmingham. This one-day workshop, funded by the EPSRC Grant ‘Sub-Elliptic Harmonic Analysis’, saw the participation of more than 25 mathematicians from the UK (Bath, Birmingham, Edinburgh, Imperial, Oxford, Sussex, Warwick) and overseas (Croatia, Italy, Germany, Japan). Lectures were given by Fulvio Ricci (Scuola Normale Superiore), Neal Bez (Saitama University), Stefan Buschenhenke (Christian-Albrechts-Universität zu Kiel), and Leonardo Tolomeo (University of Edinburgh), encompassing a number of topics at the forefront of research in Harmonic Analysis and PDE (harmonic analysis on homogeneous manifolds, smoothing estimates for the kinetic transport equation, nonlinear Brascamp–Lieb inequalities, and Gibbs measures for stochastic hyperbolic equations). This fruitful and pleasant day was concluded with a walk to Harborne and an informal dinner at the characteristic English pub ‘The Bell’.



Harmonic Analysis and PDE Day

Best talk prize for Combinatorics PhD student

by MATTHEW COULSON

Each year the students of the Jagiellonian University organise the International Workshop for Young Mathematicians in Krakow, Poland. The workshop is aimed at advanced undergraduate and PhD students in any area of maths. This year was the 21st time the conference had been run and the main topic was Combinatorics. We were treated to a number of fantastic lectures from the invited speakers, each giving very understandable introductions to their area of Combinatorics before presenting some

of their recent results including Hamiltonicity of randomly augmented graphs, the Erdős–Hajnal property and some colouring problems arising from the 1-2-3 conjecture. Students were also able to give a talk and I spoke on ‘The Lopsided Lovász Local Lemma and Rainbow Substructures’. I gave an outline of how one can combine the local lemma with switchings to find rainbow substructures at extremal thresholds. I was awarded the prize for best student talk at the conference against a large number of nice talks on various topics including hypergraph colouring and generalised Turán numbers. Next year’s topic is Complex Analysis and I would recommend the conference to anyone who is potentially interested in going!



Matthew Coulson receiving his prize

A poster for a comedy night. It features a stylized cartoon illustration of a man's face with a large, curly hairdo. The text on the poster reads: "Comedy Night Robert White", "Also featuring Tom Houghton and Rahul Kohli", and "11th October 2018, 7.30pm". At the bottom, it says "UNIVERSITY OF BIRMINGHAM", "The Bramall", and "Buy tickets at www.thebramall.co.uk or call 0121 414 4414". The background is orange with a yellow and white diamond pattern at the top and bottom.

Comedy Night
Robert White
Also featuring
Tom Houghton and Rahul Kohli
11th October 2018, 7.30pm

UNIVERSITY OF BIRMINGHAM | The Bramall | Buy tickets at www.thebramall.co.uk or call 0121 414 4414