British Combinatorial Newsletter No. 18 (April 2015)

Remember this Newsletter aims to complement the Bulletin with some additional information about (e.g.) details of forthcoming meetings, summaries of recent movements of people, visitors, etc: records of “outreach” activities or recent breakthrough results in the subject: it might include a combinatorial problem or an occasional oddity. British Combinatorial Newsletters are produced at the start of the academic year (when the movements information is most useful to e.g. seminar organisers) and also at around the time of the Bulletin (end of April or so) to let you know what is coming up over the Summer. They are on the BCB website at http://www.essex.ac.uk/maths/BCB/newsletters.htm

If you have material which you think might be suitable for inclusion, or suggestions as to how the newsletter should evolve, please contact the Editor, David Penman (dbpenman@essex.ac.uk). The Editor reserves control of content.

New BCC Website.

As many of you will now be aware, the BCC now has a shiny new website, viz and namely https://britishcombinatorial.wordpress.com/

Most of the materials, including the Bulletin and these Newsletters, will be moving across to this site over the next while. This includes

Forthcoming meetings

The 2015 BCC (the 25th) will be at Warwick. The dates are 6-10 July 2015, and the local organising team is Artur Czumaj, Agelos Georgakopoulos, Dan Král’, Vadim Lozin and Oleg Pikhurko.

There invited speakers will be Manuel Bodirsky (Paris), Xing Chaoping (Nanyang), David Conlon (Oxford), Stefanie Gerke (RHUL), Gil Kalai (Jerusalem), Tomasz Łuczak (Poznan), Gary McGuire (Dublin), Sergey Norin (McGill) and Nik Ruškuc (St. Andrews).

The website is http://www2.warwick.ac.uk/fac/sci/maths/research/events/2014-15/nonsymposium/25bcc/

Registration is open at http://www2.warwick.ac.uk/fac/sci/maths/research/events/2014-15/nonsymposium/25bcc/registration

The closing date for early bird registration was 30 April, but registration will remain open until 15 June. The registration process will also offer you a number of accommodation options. There will be the usual opportunity to submit talks and this should be done in the manner described at http://www2.warwick.ac.uk/fac/sci/maths/research/events/2014-15/nonsymposium/25bcc/
**bcc/talks**
by 1st June.

Social events will include a visit to Warwick Castle on the Wednesday afternoon and the dinner on the Thursday night.

**Regular short meetings supported by the BCC:**

**London:** The next pair of linked one-day London colloquia in Combinatorics took place at QMUL on **Wednesday 13 May 2014** and at LSE on **Thursday 14 May 2014**. The website is [http://www.lse.ac.uk/maths/Seminars/Colloquia_2015.aspx](http://www.lse.ac.uk/maths/Seminars/Colloquia_2015.aspx) and it now contains all titles.

On 13 May at QMUL talks are in the Mathematics Lecture Theatre in the Mathematics building. Speakers are Anita Liebenau (Warwick), Ron Peled (Tel Aviv), Alex Scott (Oxford), Olof Sisask (Stockholm), Gregory Sorkin (LSE) and Stephan Thomasse (Lyons).

On 14 May at LSE we are in the New Theatre in the East Building (EAS E171). Speakers are Christina Goldschmidt (Oxford), Tim Gowers (Cambridge), Will Perkins (Birmingham), Alexey Pokrovskiy (Berlin), Lex Schrijver (Amsterdam) and Frank Vallentin (Cologne).

Further details, including running order etc. and abstracts, will appear on the website in due course: it already contains some information about funding for research students and childcare costs.

**Oxford 1-day meeting in Combinatorics:** The next meeting is on **Thursday 27th May 2015** (about a week earlier than last year!) Details are at [http://people.maths.ox.ac.uk/scott/Pages/one-day_meeting.htm](http://people.maths.ox.ac.uk/scott/Pages/one-day_meeting.htm) and the speakers are Amin Coja-Oghlan (Frankfurt), Louigi Addario-Berry (McGill), Maria Chudnovsky (Princeton), Andrew Thomason (Cambridge) and Paul Seymour (Princeton). Details about travel expenses etc. on the website.

**Postgraduate Combinatorial Conference (PCC):** The most recent PCC was at QMUL in 2015, hosted by Katie Clinch and Trevor Pinto, website [http://www.maths.qmul.ac.uk/pcc2015](http://www.maths.qmul.ac.uk/pcc2015) The next one will be at Leeds hosted by Anja Komatar: further details will be announced in due course.

**Old Codgers meeting at Reading.** This most recent such meeting took place on 5 November 2014 and details are at [https://www.reading.ac.uk/maths-and-stats/news/Combinatorics-Colloquium.aspx](https://www.reading.ac.uk/maths-and-stats/news/Combinatorics-Colloquium.aspx) It is hoped there will be a similar event this year.

**Open University Winter Combinatorics Meeting.** The most recent meeting took place on 4 March 2015: details at [http://wcm.open.ac.uk](http://wcm.open.ac.uk/) where it is hoped details of the next meeting will be posted in due course.
You are reminded that the Editor maintains a mailing list for advertising other forthcoming UK meetings, Ph.D. student level or above courses, etc. in combinatorics (broadly interpreted). Please email him if you would like to publicise such a meeting. Remember lists of forthcoming conferences in Combinatorics and related areas can be found at http://www.maths.qmul.ac.uk/~pjc/bcc/conferences.html or http://www.math.uiuc.edu/~west/meetlist.html

Other Forthcoming Conferences and Meetings.

Several other interesting meetings and/or courses are coming up:

**Random walks on graphs and potential theory**  This is at Warwick from 18-25 May 2015. Invited speakers are Omer Angel (UBC), Márton Balázs (Bristol), Johannes Carmesin (Hamburg/Cambridge), Ronen Eldan (University of Washington) Ori Gurel-Gurevich (Hebrew University, Jerusalem), Antoine Gournay (Neuchatel), Ben Hambly (Oxford), Vadim Kaimanovich (University of Ottawa), Daniel Lenz (Jena), Peter Mšrters (Bath), Thomas Sauerwald (Cambridge), Alessandro Sisto (ETH), Perla Sousi (Cambridge), Stephan Wagner (Stellenbosch), Anita Winter (Duisburg-Essen), Wolfgang Woess (TU Graz) and Alex Zhai (Stanford). Though there is no registration fee, (putative) participants are required to register: this is now closed officially, but those with a particular interest in going who are not officially doing so yet could try talking to the organiser, Agelos Georgakopoulos.

**Symmetry and Groups.** This meeting on history will take place at Birkbeck on Saturday 23 May 2015. The webpage is http://www.bbk.ac.uk/ems/faculty/hart/symmetry-and-groups-conference and speakers are Sarah Hart (Birkbeck), Peter Neumann (Oxford), Norman Biggs (LSE), Mark Ronan (UCL), Rob Curtis (Birmingham) and Siobhan Roberts (author of King of Infinite Space). Organisers are Sarah Hart and Jane Wess. Note starting time of 09.30 (first talk at 10.00).

**The 13th Annual Conference on Permutation Patterns** will take place in London from 15-19 June. at De Morgan House. Registration is open and remains so until 1 May. The invited speakers are Bruce Sagan (Michigan State) and Peter Cameron (St. Andrews/QMUL). Abstracts may be submitted up until 15 May. The website is https://sites.google.com/site/pp2015london/ which contains some information on e.g. accommodation. Abstracts to be submitted, in the manner described on the website, by 15 May.

**Workshop on Network Geometry.** This will take place on 16 June at QMUL in London. The webpage is http://ginestra-bianconi-6flt.squarespace.com/ and main speakers are Marian Boguna (Barcelona), Fay Dowker (Imperial), Tim Evans (Imperial), Heather Harrington (Oxford), Dmitri Krioukov (Northeastern), Shahn Majid (QMUL), Mason Porter (Oxford), Ruben Sanchez-Garcia (Southampton), Simone Severini (UCL), Carlo Trugenberger (Swiss Scientific) and Francesco Vaccarino (Politecnico di Torino). There is an opportunity to contribute talks: these
should be emailed to network.geometry@gmail.com by 15 June. Note that, though attendance is free, registration is required – see the website for how to do this.

**Two courses by Jack Edmonds in London.** The first of these will take place from 16-19 June at QMUL (10.00-12.00 on each of these days). The second is at the London Taught Course Centre on the afternoon of Monday 22 June and morning of Tuesday 23 June. For details of how to express interest in attending either or both of the courses, which are independent of each other, see http://www.maths.qmul.ac.uk/~fink/Edmonds2015.html

**Regularity and Analytic Methods in Combinatorics.** This research school will take place at Warwick from **1-5 July 2015** (which the eagle-eyed will observe is immediately before the BCC). Organisers are Peter Keevash (Oxford), Dan Král’ (Warwick), Oleg Pikhurko (Warwick) and Nick Woodhouse (CMI). Website http://www2.warwick.ac.uk/fac/sci/maths/people/staff/daniel_kral/school15

The three main lecture courses will be:

- Regularity Methods (David Conlon, Oxford)
- Limits of Combinatorial Structures (Christian Borgs and Henry Cohn, Microsoft)
- Property Testing (Asaf Shapira, Tel-Aviv)

There will also be three more general talks by Noga Alon (Tel Aviv), Christian Borgs (Microsoft) and Ben Green (Oxford).

**Workshop on New directions for the Tutte polynomial.** This will take place at Royal Holloway (RHUL) from **11-14 July** (which the eagle-eyed will observe is immediately following the BCC). The website is http://tutte2015.ma.rhul.ac.uk/

Registration is open and will remain so until **18 June.** To register, go to http://onlinestore.rhul.ac.uk/browse/product.asp?compid=1&modid=1&catid=638

**Non-combinatorial combinatorics,** This will take place at Warwick from **14-16 September 2015.** The web page is here. Organisers are Oleg Pikhurko (Warwick) and Konstantinos Tyros (Warwick).

Main speakers are Noga Alon (Tel Aviv), Keith Ball (Warwick), David Ellis (QMUL), Wojciech Samotij (Tel Aviv), Balázs Szegedy (Budapest) and Julia Wolf (Bristol). If you wish to give a contributed talk, please email your title and abstract to ncc2015@warwick.ac.uk by **20 July 2015.** (notification by 1 August). See the website for more details: please note in particular that if you wish to apply for accommodation, you should do so by **20 July** at latest. Absolute deadline for registration is 10 August.

**Donald Preece Memorial Day.** This will take place at QMUL on **17 September 2015.** The venue will be the Fogg Lecture theatre. The website is http://www.maths.qmul.ac.uk/~pic/dapday.html and the speakers are a range of those who knew Donald in his various roles. The website includes the programme.
LMS/EMS Joint Anniversary Mathematical Weekend. This will take place at Birmingham from 18–20 September 2015. The website is http://web.mat.bham.ac.uk/emslmsweekend/

The three themes are Algebra, Analysis and (of course) Combinatorics, with the plenary speakers being: Noga Alon (Tel Aviv), Keith Ball (Warwick), Béla Bollobás (Cambridge), Tim Gowers (Cambridge), Stefanie Petermichl (Toulouse) and Aner Shalev (Jerusalem). The speakers in the Combinatorics section are: József Balogh (Illinois), Mihyun Kang (Graz), Michael Krivelevich (Tel Aviv), Marc Noy (Barcelona), Wojciech Samotij (Tel Aviv), Mathias Schacht (Hamburg) and Benny Sudakov (Zürich).

Registration is open until 1 September and costs 20 pounds.

Movements.

Birmingham: Dr. Guillem Perarnau and Dr. Felix Joos will be moving to Birmingham as postdocs in September 2015. Dr. Katherine Staden has left to take up a postdoc at Warwick. Dr. Mohammed Abdullah has left, and Dr. Will Perkins has arrived (as previously notified).

Bristol: Dr. Tony Skyner has left academia.

Derby: Dr. Nicholas Korpelainen has joined the Department as a Lecturer after a postdoc at the Open University. Website http://derby.academia.edu/NicholasKorpelainen

Durham: Dr. Archontia Giannapoulou has left to take up another postdoc position in Warsaw. Dr. Alonso Castillo-Ramirez is a new postdoc. Research interests include memoryless computation, automata networks, finite group theory, nonassociative algebras and semigroup theory.

Lancaster: Dr. Tony Nixon has been appointed to a Lectureship. He is interested in rigidity

Warwick. Aistis Atminas, Jan Volec and Lukas Mach have left Warwick to take up new roles. Dr. Victor Zamaraev (graph theory, combinatorics) is a Research Associate working with Vadim Lozin, and Dr Katherine Staden (graph theory, combinatorics) is working with Oleg Pikhurko.

Recent Ph.Ds. in Combinatorics.

Birmingham: Katherine Staden was awarded a Ph.D. in January 2015. She was co-supervised by Deryk Osthus and Daniela Kühn, and the external was Peter Allen (LSE).

Essex: Christopher Harden was awarded a Ph.D. for a thesis on Fixed Point Polynomials of Permutation Groups in Autumn 2014. The examiners were Peter
Unsolved Problem

From one of Peter Cameron’s recent blog postings.

Consider a Latin square (i.e. an $n \times n$ matrix, all of whose entries are 1,2,...,n in such a way that, for each $1 \leq i \leq n$ there is exactly one $i$ in each row and exactly one $i$ in each column. Thus each row (and each column) is effectively a permutation of 1,2,...,n. We will make the (very mild) assumption that the first row is the identity permutation: the Latin square rules now imply that the 2nd row has to be not just a permutation of 1,2,...,n but a derangement (any fixed point would, in its column, have the same number in 1st and 2nd rows).

Now suppose the Latin square is selected uniformly at random from all Latin squares whose first row is the identity. The question is: what is the distribution, on the set of all derangements, of the 2nd row?

Standard naïve guess would of course be “uniform”. But this is too optimistic. For example, with $n = 4$ in $S_4$ derangements are either 4-cycles (6 of them) or products of two disjoint transpositions (3 of them): if the 2nd row of the Latin square is a 4-cycle there are only two ways to fill in the other rows (basically the other two non-identity powers of that 4-cycle in one of the two orders): if however it is two disjoint transpositions, there are four ways to extend the first two rows to a Latin square.

However, asymptotically it appears from empirical evidence – though I do not think it has been proven - that the distribution is asymptotically uniform. (A paper by Cavanagh, Greenhill and Wanless proves non-trivial results on this, but not enough to deduce the uniformity: see: [http://web.maths.unsw.edu.au/~csg/papers/CGW.pdf](http://web.maths.unsw.edu.au/~csg/papers/CGW.pdf)). Further, it appears that the convergence is fast - we deliberately leave open the question of how fast.