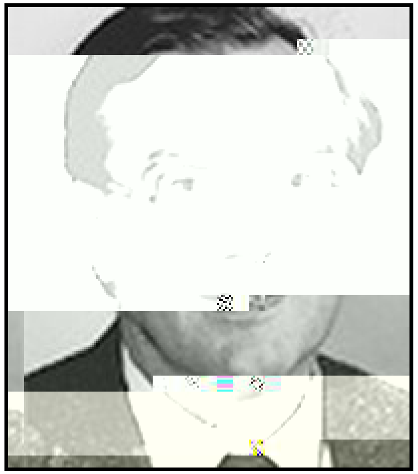
One-Day Colloquia in Combinatorics, in Honour of Norman Biggs **2007**

Wednesday 16th May

Queen Mary, University of London
Start time: 10.30

Béla Bollobás (University of Cambridge)
David Conlon (University of Cambridge)
Jackie Daykin (Royal Holloway, UoL)
Tony Gardiner (University of Birmingham)
Anthony Hilton (Queen Mary, UoL)
Svante Janson (University of Uppsala, Sweden)
Colin McDiarmid (University of Oxford)
Robin Wilson (Open University)
Douglas Woodall (University of Nottingham)



Thursday 17th May

London School of Economics and Political Science

There will be a drinks reception following the final talk on Thursday 17th.

Support for this event by the London Mathematical Society and the British Combinatorial Committee is gratefully acknowledged.

Please click on these links for titles of talks and schedules and location information.

Talks will be held in the Maths Lecture Theatre (MLT) and Room 103. These are in the School of Mathematical Sciences.

- MLT

Coffee break

- 103/ - MLT

- 103/ - MLT

Lunch (own arrangements - options on campus and nearby)

- MLT

- MLT

Coffee break

- MLT

- MLT

Dinner (own arrangements - curry enthusiasts might head for Brick Lane)

Talks will be held in the New Theatre (E171), in the East Building. The entrance to the East Building is on Houghton Street.

Coffee break - E168

Wednesday May 16th, Queen Mary

B.B ML

Anthony Hilton

Queen Mary University of London

Degree bounded factorizations of graphs

For $d \geq 1$, $s \geq 0$, a $(d, d+s)$*-graph* is a graph whose degrees all lie in the interval $\{d, d+1, \ldots, d+s\}$. For $r \geq 1$, $a \geq 0$, an $(r, r+a)$*-factor* of a graph G is a spanning $(r, r+a)$-subgraph of G. An $(r, r+a)$*-factorization* of a graph G is a decomposition of G into edge-disjoint $(r, r+a)$-factors.

We discuss a number of results about $(r, r+a)$-factorizations of $(d, d+s)$-graphs and multigraphs. The emphasis will be on the contrast between the good results known for simple graphs and pseudographs (multigraphs with loops permitted) and the much less satisfactory results known for multigraphs (without loops).

As an example of the results for t

David Conlon

University of Cambridge

Some new results in Ramsey Theory

Ramsey's theorem states that given two natural numbers k and l there exists a number n such that if the edges of a complete graph on n vertices are two-coloured in red and blue then the graph must contain either a red K_k or a blue K_l. The smallest such n is referred to as the Ramsey number $r(k, l)$

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Jackie Daykin

oya Ho oway n vers ty o London

String factorization algorithmics

A str n s a te sequence o sy bo s over an arb trary a p abet and a actor zat on s a part t on n o a str n ay a set W o str n s s a c rc MFF every str n as a un que ax a actor zat on over W e c ass c c rc MFF s t e set o Lyndon words de ed us n ex co rap c order n

In t s presentat on opt a Lyndon actor zat on a or t s w be out ned or bot t e sequent a and C C AM para e ode s o co put n e t e sequent a a or t can be p e ented w t a s p e array t e para e a or t requ res a su x tree data structure e urt er descr be c aracter st c co b nator a propert es o a c rc MFFs and t e construct on o suc a set e ustrate w t add t ona exa p es o c rc MFFs w ere eac s der ved ro a et d or tota y order n sets ese nc ude t e word c rc MFF der ved ro t e order et d or tota y order n str n s over arb trary a p abets

ML

Tony Gardiner

University of Birmingham

Combinatorics for the common man

The characteristic clarity of Norman's writing over the years has made combinatorial ideas accessible to tens of thousands of mathematics and computer science students. In this talk I will use specific examples to explore the question of how combinatorial ideas should be introduced, and whether they should be introduced earlier than has traditionally been the case in England.

BB ML

Béla Bollobás

University of Cambridge and University of Memphis

Problems, conjectures and results on the two-dimensional square lattice

ML

Douglas Woodall

University of Nottingham

Recent results on graph colourings

A more precise [illegible]

ML

Svante Janson

University of Uppsala

Two sorting problems and the maximum number of runs in a randomly evolving sequence

We study the space requirements of a sorting algorithm where only items that at the end will be adjacent are kept together. This is equivalent to the following combinatorial problem: Consider a string of fixed length n that starts as a string of 0's, and then evolves by changing each character to 1, with the changes done in random order. What is the maximal number of runs of 1's?

We give asymptotic results for the distribution and mean. It turns out that, as in many problems involving a maximum, the maximum is asymptotically normal, with fluctuations of order $n^{1/2}$, and to the first order well approximated by the number of runs at the instance when the expectation is maximized, in this case when half the elements have changed to 1; there is also a second order term of order $n^{1/3}$.

We also treat some variations, including a sock-sorting problem.

ML

Colin McDiarmid

University of Oxford

Random graphs on surfaces

There have been dramatic successes recently with the two related problems of counting labelled planar graphs, and finding typical properties of random labelled planar graphs. We start the process here of extending such investigations to graphs embeddable on any fixed surface S. In particular we see that the labelled graphs embeddable on S have the same growth constant as for planar graphs, and the same holds for unlabelled graphs. Also, if we pick a graph [illegible]

Thursday May 17th, LSE

A ta s ta e p ace n t e New eatre E

[illegible]

Dominic Welsh

n vers ty o xord

Counting problems in minor closed classes of graphs

L $\mathcal{H}$ s a te co ect on o rap **Ex**$\mathcal{H}$ denotes t e c ass o rap G suc t at G as no e ber o $\mathcal{H}$ as a *minor*

e c ass ca exa p e s w en $\mathcal{H}$ $\{K_5, K_{3,3}\}$ so t at **Ex**$\mathcal{H}$ s t p

Derek Smith

n vers ty o G a or an

From distance-transitive graphs to spectrum e ciency

wor o Nor an B s n t ate s ocused on d stance trans t ve rap and a so on co our n prob e s n rap In t s app ed so e o t deas ar s n n t t ory o d stance trans t ve rap to cod n t ory In t s deve oped an nterest n t app cat on o t a or t s and t ory o rap co our n to rad o requency ass n ent

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