

THE LONDON MATHEMATICAL SOCIETY



NEWSLETTER

No. 371 June 2008

Society Meetings and Events

2008

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Monday 15 September

Computer Science Day London

Friday 21 November

AGM, London

12–13 December

Joint Meeting with the Edinburgh Mathematical Society Edinburgh

MATHEMATICS POLICY ROUND-UP

The Higher Education Funding Council for England has announced changes to the proposed Research Excellence Framework following its consultation process. As well as extending the development period for the framework, HEFCE has decided to remove the distinction between assessment arrangements for the sciences and arrangements for all other subjects. This has been a key issue for the mathematical sciences, which have argued that the metrics-based model proposed for the sciences will not fit mathematics and related research. The Council for the Mathematical Sciences said that it is pleased with the change as it has argued from the beginning of the process that the science/non-science divide was artificial and that each subject should be assessed according to its particular needs, with metrics tailored to inform a peer-review process rather than used to drive the assessment of research excellence.

The Council for the Mathematical Sciences responded to the House of Commons Innovation, Universities, Science and Skills Select Committee Inquiry *After Leitch: Implementing Skills and Training Policies*. This report, published in 2006, examined the UK's long term skills need and called for increased levels of

literacy and numeracy and boosting the number of apprenticeships. It said that by 2020, 40% of adults should be educated to degree level (this figure was 29% in 2005). The CMS response focused on regional provision of university level mathematical sciences courses. Following the Steele report of 2007, it highlighted potential mathematics deserts where local students would not be able to study the subject without leaving home.

As usual, March and April were the months of conferences. The 60th British Mathematics Colloquium was held in York. The 50th British Applied Mathematics Colloquium was held in Manchester. Keele was host to the teachers' *Joined Up Mathematics* conference, combining the Mathematical Association (MA), the Association of Teachers of Mathematics (ATM), the Association of Mathematics Education Teachers (AMET) and the National Association for Numeracy and Mathematics in Colleges (NANAMIC). The Heads of Departments of Mathematical Sciences (HoDoMS) met in Birmingham.

The CBI, with examining board Edexcel, published its annual skills survey in April. It found over half of employers worried about finding people with the skills they need. The STEM subjects (science,

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technology, engineering and mathematics) were in high demand with 92 per cent of firms wanting people with these skills. It found a third of larger firms recruiting from India and a quarter from China. To alleviate the problem, the report said, "it is essential to increase the number of young people with STEM degrees... by persuading more students to move from arts and humanities to science subjects."

Professor Adrian Smith has announced that he will leave his post at Queen Mary, University of London, at the end of August after 10 years as Principal. He will then take up the position of Director General, Science and Research, and Chief Scientific Advisor at the Department for Innovation, Universities and Skills. He succeeds Sir Keith O'Nions who retired at the beginning of April. Professor Smith was the author the 2004 government inquiry into post-14 mathematics education and is also chair of the Advisory Committee on Mathematics Education (ACME). The appointment of a mathematician to this post is particularly welcome since there has been no senior voice in government on

mathematics since Professor Celia Hoyles left her role as Chief Advisor for Mathematics at the then Department for Education and Skills in November 2007.

Finally, news just in from the BBC website: maths is sexy. A new adaptation of *The Oxford Murders* has been released in cinemas. The film centres around a professor of mathematics and his graduate student who stumble across a series of murders connected by mathematical symbols. Also topping the UK box office at cinemas is the film *21*, starring Kevin Spacey as a mathematics professor who takes his students to Las Vegas to cheat the casino. The star of *The Oxford Murders*, John Hurt, himself the son of a mathematician and engineer, explained, "There is something that has brought mathematics to the fore. I think probably because we live in a world with so many lies, and so much lack of truth, that it has become quite sexy to think of the one thing we have which is the only language that is truthful."

Caroline Davis
Mathematics Policy and Promotion Officer

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LMS Newsletter

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Typeset by the London Mathematical Society at De Morgan House; printed by Holbrooks Printers Ltd.

Publication dates and deadlines: published monthly, except August. Items and advertisements by the first day of the month prior to publication, or the closest preceding working day.

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Charity registration number: 252660.

LONDON MATHEMATICAL SOCIETY

MIDLANDS REGIONAL MEETING

School of Mathematics, University of Birmingham

Monday 9 June 2008

2.00 Opening of the meeting

F. Ricci (Pisa)

Commutative Fourier analysis on nilpotent Lie groups

3.00 E.B. Davies (King's College London)

Spectral properties of matrices associated with some directed graphs

4.00 Tea

4.45 L. Vega (Bilbao)

Convexity and uniqueness for some evolution equations

Dinner

These lectures are all aimed at a general mathematical audience. All interested, whether LMS members or not, are most welcome to attend this event. Supervisors are asked to encourage their students to attend.

There will be a dinner in the evening on the University campus. Please email Neal Bez (n.bez@bham.ac.uk) if you wish to attend the dinner.

The meeting will be followed by a more specialised workshop entitled *Harmonic Analysis and Partial Differential Equations* from 10 to 12 June. This will be an open meeting and there is no registration fee (although guests are asked to register their intention to attend using the online registration system on the website <http://maths.bham.ac.uk/lmsmeeting>). Postgraduate students are particularly encouraged to attend.

There are funds available to contribute to the expenses of members of the LMS or research students to attend the meeting and workshop. Requests for support should be made to Neal Bez.

For further details visit the website <http://maths.bham.ac.uk/lmsmeeting>.

LMS HARDY LECTURER 2008

The 2008 LMS Hardy Lecturer is Professor Shmuel Weinberger (University of Chicago and Hebrew University). During his visit to the UK he will give talks at Edinburgh, Liverpool and Durham followed by the Hardy Lecture at the Society meeting in London on Friday 4 July. Professor Weinberger will give the following lectures.

Playing the Novikov game

Edinburgh: 23 June at 4.30 pm. Venue: Lecture Theatre A, James Clerk Maxwell Building
Organiser Tom Lenagan (T.Lenagan@ed.ac.uk)

The Novikov conjecture is a statement restricting the tangent bundles of homotopy equivalent manifolds. Over the past thirty years, a number of variants and analogues have been suggested, and many special cases have been proved. Last year, Jonathan Rosenberg suggested an algebraic geometric version, but it turns out to be true unconditionally. This talk will explain how to 'play the Novikov game' and when the conjecture one thus obtains should be conjectural, and when it should be (conjecturally!) a theorem. (Joint work with J. Block.)

Applications of quantitative topology

Liverpool: 25 June at 2.00 pm. Venue: Mathematical Sciences Building
Organiser Peter Giblin (pgiblin@liverpool.ac.uk)

Topology is ordinarily conceived of as a qualitative part of mathematics. In this talk, I will try to show how some problems ranging from the topology of singular spaces to differential geometry and algebraic K -theory to the analysis of large data sets can be approached using quantitative variants of the ideas of ordinary topology.

The Liverpool meeting is in collaboration with Manchester (Nige.Ray@manchester.ac.uk).

Topological methods for the analysis of large data sets

Durham: 30 June at 5.00 pm. Venue: CG93 (the Scarborough Lecture Theatre)
Organiser Michael Farber (Michael.Farber@durham.ac.uk)

During the past several years a number of researchers have been using basic topological ideas to try to detect non-linear structure in large data sets, as a supplement to the more traditional statistical tools that are usually employed. I will try to explain an example due to G. Carlsson *et al.* regarding spaces of visual images, and then discuss some stochastic-geometrical-topological problems related to this. (Based on joint work with P. Niyogi and S. Smale, and with Y. Baryshnikov.)

Complexity, entropy, and variational problems

London: 4 July at 5.15 pm. Venue: University College London.
Organiser: Susan Oakes (susan.oakes@lms.ac.uk)

This talk will explain an approach based on mathematical logic to certain variational problems. The theme is that algorithmic complexity begets geometric complexity, which, in turn, causes the existence of many critical points for functionals. Examples will be drawn from theory of periodic geodesics, embedded hypersurfaces in Euclidean space, and the existence of extremal metrics on smooth manifolds. (Joint work with A. Nabutovsky.)

Professor Béla Bollobás (Cambridge), the 2007 LMS Senior Whitehead Prize Winner, is the second speaker at the London meeting. There will also be a programme of events that day especially for graduate students.

Further information can be obtained from the local organisers. For general enquiries contact Stephen Huggett, LMS Programme Secretary.

GRADUATE STUDENT AND SOCIETY MEETING

Friday 4 July 2008

University College London, London WC1

GRADUATE STUDENT MEETING

This meeting is intended as an introduction to the Society meeting later in the day. All graduate students (and indeed any mathematicians) will be very welcome.

- 9.30 Coffee/Tea
- 10.00 **Graham Brightwell** (LSE) *An introduction to entropy*
- 11.00 Coffee/Tea
- 11.15 Graduate student talks
- 13.00 Lunch (buffet)
- 14.00 Award prizes
- 14.05 **Susan Hezlet** (LMS Publisher) *How to get your papers published*
- 14.15 **Richard Thomas** (Imperial College London) *Introduction to Morse theory*
- 15.15 Move to J.Z. Young Lecture Theatre for LMS meeting (see below)

The lectures will be in Room 500 Mathematics. Coffee and buffet lunch will be provided in the Mathematics Undergraduate common room. For directions, see www.ucl.ac.uk/Mathematics/department/location.html.

We would like to invite graduate students to give short talks (15 minutes) aimed at a general mathematical audience. Prizes will be awarded for the best two talks.

Graduate students wishing to attend should register by email before **6 June** and indicate whether they wish to give a talk: John Talbot (talbot@math.ucl.ac.uk) or Andrew Lobb (a.lobb@imperial.ac.uk).

SOCIETY MEETING

- 15.30 LMS business, including the announcement of the 2008 prize winners (open to all)
- 15.45 **Béla Bollobás** (Cambridge), Senior Whitehead Prize Winner 2007
Projections, entropy and some applications
- 16.45 Tea
- 17.15 **Shmuel Weinberger** (University of Chicago and Hebrew University)
Complexity, entropy, and variational problems (LMS Hardy Lecture)

The Society meeting will be in the J.Z. Young Lecture Theatre, Gower Street. A reception will be held at De Morgan House at 6.30 pm followed by a dinner. For further information contact Susan Oakes at the Society (susan.oakes@lms.ac.uk). There are funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Requests for support, including an estimate of expenses, may be addressed to the Programme Secretary at the Society (web: www.lms.ac.uk; email: grants@lms.ac.uk).

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GENERAL MEETING

There will be a General Meeting of the Society at 3.30 pm on Friday 4 July, to be held at University College, London. The business shall be:

- (i) the appointment of Scrutineers;
- (ii) announcement of Council's recommendation for Honorary Membership;
- (iii) announcement of Prize winners for 2008.

I hope that as many members as possible will be able to attend.

Peter Cooper
Executive Secretary

LMS MEETING AND RECEPTION AT SECM

The London Mathematical Society will be holding a meeting and reception during the 5th European Congress of Mathematics (SECM) in Amsterdam from 14 to 18 July 2008. The Society meeting and reception will be held from 6:30 pm to 8.00 pm on Thursday 17 July. LMS members who have not already done so will have the opportunity to sign the Membership Book which dates back to 1865.

Members who wish to attend the meeting and reception should apply for their free ticket to Susan Oakes, the Administrator of the Society (susan.oakes@lms.ac.uk) no later than **Monday 7 July**. The Society hopes to entertain as many as possible of its members, but numbers are limited by the capacity of the room.

GRAHAM HIGMAN

Graham Higman, FRS, who was elected a member of the London Mathematical Society on 19 September 1946, died on 8 April 2008, aged 91.

John Howie writes: Graham Higman was born on 19 January 1917, the second son of Rev. Joseph Higman, a Methodist Minister. Following his father Graham himself was ordained in 1936 and, while working as an extremely successful mathematician, also practised as a

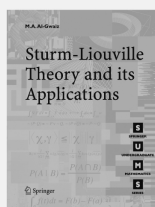
Methodist lay-preacher for well over fifty years. He was educated at Sutton Secondary School in Plymouth and at Balliol College, Oxford. His tutor, and subsequently his DPhil supervisor, was Henry Whitehead. His subsequent love affair with group theory was confirmed by his collaboration with Philip Hall in a postdoctoral year in Cambridge.

After wartime service, mainly in the Meteorological Office, he became a Lecturer in the University of Manchester, where he collaborated with Max Newman, Walter Ledermann and Bernhard Neumann. One hugely influential paper was written jointly by Higman, Bernhard Neumann and Hanna Neumann (Bernhard's wife, who was working in Hull), and so-called 'HNN extensions' have for several decades become part of the language of group theory. In 1955 Graham returned to Oxford, first as Lecturer, then very quickly as Reader and finally (in 1960) as Waynflete Professor of Pure Mathematics. He was elected a Fellow of the Royal Society in 1958.

In his Oxford period Graham continued to write highly influential papers, but within the space of this notice I will mention only two. The first, published jointly in collaboration with Philip Hall in 1956, was entitled *On the p -length of p -soluble groups and reduction theorems for Burnside's problem*. The second, published in 1961 by the Royal Society, was headed *Subgroups of finitely presented groups*. Its main theorem is 'Let G be a finitely generated group. Then G can be embedded in a finitely presented group if and only if it is recursively presented.'

Graham's influence spread in the work of his many doctoral students. On the mathematical family tree website he is credited with 49 students and 383 descendants. He also played a full part in the affairs of the London Mathematical Society: he was President (1965–67), Vice President (1963–64 and 1967–68), and Assistant Editor of the *Proceedings* (1957–64). He was honoured by the Society with the award of the Senior Berwick Prize (1962) and the De Morgan Medal (1974).

The SUMS of Mathematical Teaching



Sturm-Liouville Theory and its Applications

M. Al-Gwaiz, King Saud University, Riyadh, Saudi Arabia

Developed from a course taught to senior undergraduates, this book provides a unified introduction to Fourier analysis and special functions based on the Sturm-Liouville theory in L^2 . The text's presentation follows a clear, rigorous mathematical style that is highly readable.

2008. X, 266 p. 25 illus. (Springer Undergraduate Mathematics Series) Softcover
 ISBN 978-1-84628-971-2 ► € 32,95 | £19.95

Linear Functional Analysis

B. P. Rynne, M. A. Youngson, Heriot-Watt University, Edinburgh, UK

From the reviews ► *The authors write with a strong narrative thrust and a sensitive appreciation of the needs of the average student so that, by the final chapter, there is a real feeling of having gotten somewhere worth getting by a sensibly paced, clearly signposted route.*

► Mathematical Gazette, 2000

2nd ed. 2008. X, 324 p. 6 illus. (Springer Undergraduate Mathematics Series) Softcover
 ISBN 978-1-84800-004-9 ► € 32,95 | £19.95

Worlds Out of Nothing

A Course in the History of Geometry in the 19th Century

J. Gray, The Open University, Buckinghamshire, UK

From the reviews ► *Gray's new book will become both a classic reference and a model on how to write a useful course text. With original source material woven in with historical context, this book is a fun read as it examines geometry historically as a connected sequence of diverse ideas ... If you enjoy mathematics, buy this and read it! Summing Up: Highly recommended...*

► J. Johnson, CHOICE, Vol. 44 (11), July, 2007

2007. XXIV, 376 p. 68 illus. (Springer Undergraduate Mathematics Series) Softcover
 ISBN 978-1-84628-632-2 ► € 32,95 | £19.95

Game Theory

Decisions, Interaction and Evolution

J. N. Webb, Nottingham, UK

This book offers an informal introduction to game theory intended as a first course for undergraduate students of mathematics. Uniquely, it covers optimal decisions, classical games and evolutionary game theory in one volume.

2007. X, 242 p. (Springer Undergraduate Mathematics Series) Softcover
 ISBN 978-1-84628-423-6 ► € 32,95 | £19.95

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ABEL PRIZE – ERRATA

The winners of the 2008 Abel Prize were announced on 27 March by Ole Didrik Lærum, president of the Norwegian Academy of Science and Letters, not as reported in the May 2008 *Newsletter*. Professor Marcus du Sautoy then gave a popular presentation of the prize-winners' work and interviewed both winners, John Thompson in Florida and Jacques Tits in Paris, by telephone.

The prizes were presented by His Majesty King Harald at the Abel Prize Award Ceremony in Oslo on 20 May 2008.

The *Newsletter* also suggested that Niels Henrik Abel had been a pioneer in group theory, the field of both winners. In fact, although his name is commonly associated with group theory, as a major category of groups (abelian groups) were named after him, Abel's great work in the theory of equations was the last that did not have group theory available as a tool.

GLOBAL RESEARCH PARTNERSHIP GRANT

King Abdullah University of Science and Technology's (KAUST) Global Research Partnership has announced a major grant to Oxford's new Centre for Collaborative Applied Mathematics (OCCAM), based in the Mathematical Institute.

OCCAM, led by Principal Investigator John Ockendon and six Co-Principal Investigators, will lead to the development of mathematical solutions to real-world problems, as diverse as modelling fluid-structure and acoustic-structure interactions and petroleum reservoir simulation (with applications in industry), modelling of plant and crop growth in stressed environments and vegetation-dune interactions (with applications in agriculture and land use policy). OCCAM will also enable a broad range of the basic and applied

research lines at KAUST. OCCAM and its classes, lectures and local and international network will be accessible through this collaboration. The Oxford Mathematical Institute's renowned "Industrial Study Group" methodology – which provides a direct link between academe and the problems faced by commercial enterprises – will be transferred to KAUST between now and 2010.

Other Global Partnership Centres are to be at Cornell University, Stanford University and Texas A&M University.

WOLF FOUNDATION PRIZE

The Prize Committee for Mathematics has unanimously decided that the 2008 Wolf Foundation Prize in Mathematics for 2008 will be jointly awarded to:

Pierre R. Deligne (Institute for Advanced Study, Princeton) for his work on mixed Hodge theory; the Weil conjectures; the Riemann–Hilbert correspondence; and for his contributions to arithmetic;

Phillip A. Griffiths (Institute for Advanced Study, Princeton) for his work on variations of Hodge structures; the theory of periods of abelian integrals; and for his contributions to complex differential geometry;

David B. Mumford (Brown University) for his work on algebraic surfaces; on geometric invariant theory; and for laying the foundations of the modern algebraic theory of moduli of curves and theta functions.

Information about the Wolf Foundation Prizes can be found at www.wolffund.org.il/main.asp.

MATHEMATICS AND STATISTICS IN AUSTRALIA

Dear friends,
I wonder if you could help to publicise the problems facing mathematics and statistics in Australia. Both disciplines are

facing severe cuts at some Australian universities, and the opportunity to study them, except as service courses, is under threat in some places. Terry Tao has recently weighed in to help us, and any assistance you could give (for example, by posting a copy of this message on a website or in an email list) would be gratefully received. Some of the relevant web pages that Terry has set up are given below. I'm sure you will find them of interest; perhaps you could draw them to the attention of others:

- <http://terrytao.wordpress.com/support-usq-maths/presentation-of-the-online-petition-to-chancellor-brazil>
- <http://terrytao.wordpress.com/2008/04/05/please-help-support-mathematics-at-the-university-of-southern-queensland>
- <http://terrytao.wordpress.com/support-usq-maths>
- <http://terrytao.wordpress.com/about/petition-to-support-maths-statistics-and-computing-at-usq/#comment-27928>

For example, you might wish to leave a comment at the last-named website. Thank you for your help.

Kind regards,

Peter Hall
University of Melbourne

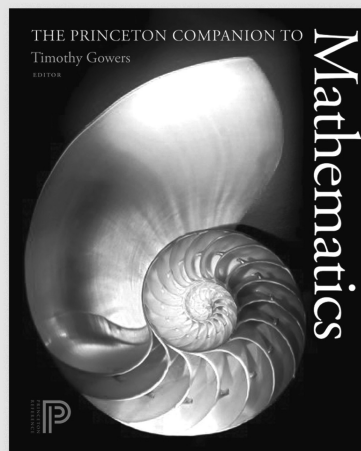
FINITE p -GROUPS

A one-day workshop on *Classification of Finite p -Groups by Coclass and Beyond* will be held on 11 July 2008 at the University of Cambridge. The speakers will include:

- Bettina Eick (TU Braunschweig)
- Sandro Mattarei (Trento)
- Pirita Paajanen (Southampton)

The workshop is part of the South England Profinite Groups Meeting which is funded by an LMS Scheme 3 grant. For more details contact Rachel Camina (rdc26@dpmms.cam.ac.uk) or visit the website at www.ma.rhul.ac.uk/profinite_groups/meetings.html.

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The Princeton Companion to Mathematics

Edited by Timothy Gowers

June Barrow-Green & Imre Leader,
associate editors

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—Simon A. Levin, Princeton University

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EPSRC MATHEMATICAL SCIENCES PROGRAMME

EPSRC has now introduced a new programme structure to help meet the future challenges that were set out in its Delivery Plan published last December. This new structure has been devised to meet high-level priorities while continuing to build a strong and competitive UK research base. Research-base programmes focus on investigator-led research and training. Business innovation programmes deliver our priority research themes and maximise the economic and social impact of the research and training we fund. Further details of the new structure can be seen in Issue 60 of *Connect* through the website www.epsrc.ac.uk/Publications/Connect/. The delivery plan can be found at www.epsrc.ac.uk/Publications/Corporate/DeliveryPlan2008-11.htm.

Mathematical Sciences Programme team

Head of Programme: Mr David Harman. Responsibilities include: Programme budget and strategy. Contact: David.Harman@epsrc.ac.uk, tel: 01793 444 304.

Portfolio Managers

- Dr Mark Bambury. Responsibilities include: Applied Mathematics; Mathematics small grants scheme; Postgraduate training. Contact: Mark.Bambury@epsrc.ac.uk, tel: 01793 444 183.
- Dr Katharine Bowes. Responsibilities include: Pure Mathematics; Complexity Science. Contact: Katharine.Bowes@epsrc.ac.uk, tel: 01793 444 162.
- Mrs Janet Edwards. Responsibilities include: Statistics, Operational Research and Mathematical Physics; Postdoctoral Fellowships. Contact: Janet.Edwards@epsrc.ac.uk, tel: 01793 444 066.

Details of all the activities within the Mathematical Science Programme can be found at www.epsrc.ac.uk/ResearchFunding/Programmes/MathematicalSciences.

The Mathematics programme is intending to hold a call for Postdoctoral Fellowships this year. Although the process and time-table may vary a little from previous years, the thrust of the call remains unchanged: to enable the most talented early-career researchers to establish an independent research career. Watch out for more information on the website and the next *Maths@EPSRC* email newsletter.

The main EPSRC website allows you to register for a weekly email alert that lists all of the latest EPSRC calls for proposals available on the website. To register for the email, go to <http://fd.epsrc.ac.uk/EmailAlert>.

VISIT OF DR D. SKULJ

Dr Damjan Skulj (University of Ljubljana, Slovenia) is visiting the UK from 21 April to 20 June. His research interests are in the area of generalized uncertainty modelling by the use of interval probabilities, which generalizes the classical Kolmogorov probability theory. Dr Skulj has particularly contributed to generalization of Markov theory using interval probabilities. Lectures have taken place on:

- Wednesday 23 April, Liverpool University
Markov chains with interval probability
- Monday 12 May, Durham University
Computational problems in the theory of Markov chains with interval probability
- Thursday 22 May, Nottingham University
Regular Markov chains with interval probability

During this visit Dr Skulj will be a Grey College Fellow at Durham University, where he will participate in an international workshop on *Principles and Methods of Statistical Inference using Interval Probability* (12–16 May).

For further information contact Professor Frank Coolen (Frank.Coolen@durham.ac.uk) at the Department of Mathematical Sciences, Durham University. Dr Skulj's visit is partially supported by an LMS Scheme 2 grant.

VISIT OF PROFESSOR YU. KARPESHINA

Professor Karpeshina (University of Alabama at Birmingham) will visit the UK from 2 to 15 June 2008. She is an expert on periodic and limit-periodic problems. Professor Karpeshina will give talks on:

- 4 June at 2.30 pm, Cardiff University
- 5 June at 3 pm, London Analysis and Probability Seminar, University College London, Department of Mathematics Room 500
- 10 June at 11.15 am, Bath University, Department of Mathematical Sciences Room 1W3.6

Her visit is partially supported by an LMS Scheme 2 grant. For more information concerning her visit, contact Leonid Parnovski at UCL (leonid@math.ucl.ac.uk).

BRITISH TOPOLOGY MEETING

The 23rd British Topology Meeting (BTM23) will take place in Belfast, Northern Ireland from 25 to 27 August 2008. The main speakers are:

- John Klein (Wayne State University)
- Thomas Schick (Universität Göttingen)
- Volkmar Welker (Universität Marburg)

There will be a number of talks contributed by the participants. Research students and postdocs are encouraged to submit an abstract. For further details and a registration form visit the website at <http://btm23.110mb.com> or contact the organisers Thomas Huettemann and Brian McMaster (btm.in.belfast@googlemail.com). The meeting is supported by an LMS conference grant and by the Irish Mathematical Society.

GRAPH-THEORETIC CONCEPTS

The 34th international workshop on *Graph-theoretic concepts in computer science* (WG 2008) will take place from 30 June to 2 July 2008 at the University of Durham. WG 2008

aims at uniting theory and practice by demonstrating how graph-theoretic concepts can be applied to various areas in computer science, or by extracting new problems from applications. The goal is to present recent research results and to identify and explore directions of future research. The invited speakers are:

- Giuseppe Di Battista (Università Roma Tre)
- Leszek Gąsieniec (University of Liverpool)
- Martin Grohe (Humboldt-Universität Berlin)

More information is available on the WG 2008 website www.dur.ac.uk/wg.2008. The workshop is supported by an LMS conference grant.

60MILES

A three-day meeting entitled *60Miles* will be held at University College London on 16 July and at De Morgan House from 17 to 18 July to celebrate the 60th birthday of Professor Miles Reid, FRS. The first day of the meeting is open to all, while the latter two days are by invitation only. The talks will focus on recent advances in algebraic geometry that are of special relevance to the achievements of Miles Reid; specifically: surfaces of general type; the Minimal Model Programme; the McKay correspondence; and explicit methods in birational geometry. Confirmed speakers are:

- F. Bogomolov (Courant)
- T. Bridgeland (Sheffield)
- F. Catanese (Bayreuth)
- S.K. Donaldson (Imperial)
- B. Fantechi (SISSA)
- Y. Kawamata (Tokyo)
- A. Kuznetsov (Steklov)
- J. McKernan (MIT)
- S. Mori (RIMS)
- S. Mukai (RIMS)
- N.I. Shepherd-Barron (Cambridge)
- V.V. Shokurov (Johns Hopkins)

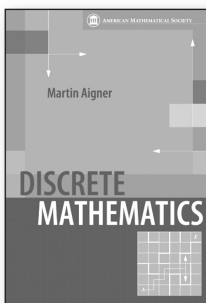
This meeting is supported by the London Mathematical Society, the Clay Mathematics Institute and the National Science Foundation. Further information is available from malham.kent.ac.uk/grdb/60Miles.

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AMERICAN MATHEMATICAL SOCIETY



Discrete Mathematics



Martin Aigner, *Freie Universität Berlin, Germany*

This book gives a leisurely and clear exposition of the main topics of discrete mathematics.

—Allen Stenger for MAA Reviews

Discrete mathematics today is a basic science for information theory, with its topics appealing to both mathematicians and computer scientists. In this updated translation of a German text, the author presents the main ideas and results of discrete mathematics, covering all the topics of interest to those seeking further study in this area.

A thread running throughout the text is the search for efficient algorithms, which revolutionized combinatorics. The point of view of wishing to construct an explicit solution using a fast algorithm coincided with the development of the first fast computers in the late 1940s. The text emphasizes the algorithmic point of view throughout.

Part 1 of the book offers the most important ideas and methods of counting finite sets, the classical theme of combinatorics. Part 2 presents graphs and algorithms, and Part 3 explores the algebraic structure on finite sets. The present edition includes a new chapter on counting patterns with symmetries and divides a previous chapter on codes into one on coding and another on cryptography, reflecting the importance of each of these topics in present discussions.

The book differs from other texts on this subject in its inclusion of more than 600 exercises, with hints and solutions to about half of them. Only linear algebra and calculus at the undergraduate level are needed to understand the details in this far-ranging look at a basic subject in mathematics and computer science.

2007; 388 pages; Hardcover; ISBN: 978-0-8218-4151-8; List US\$59; AMS members US\$47; Order code DISCMAT



A CO-PUBLISHING PARTNERSHIP



John von Neumann: Selected Letters

Miklós Rédei, *Eötvös Loránd
University, Budapest, Hungary,*
Editor

History of Mathematics, Volume 27;
2005; 301 pages; Hardcover; ISBN: 978-0-
8218-3776-4; List US\$59; AMS members
US\$47; Order code HMATH/27

The Volterra Chronicles The Life and Times of an Extraordinary Mathematician 1860–1940

Judith R. Goodstein,
*California Institute of
Technology, Pasadena, CA*

History of Mathematics, Volume 31;
2007; 310 pages; Hardcover; ISBN: 978-0-
8218-3969-0; List US\$59; AMS members
US\$47; Order code HMATH/31

Logic's Lost Genius The Life of Gerhard Gentzen

Eckart Menzler-Trott,
Munich, Germany

History of Mathematics, Volume 33;
2007; 442 pages; Hardcover; ISBN: 978-0-
8218-3550-0; List US\$89; AMS members
US\$71; Order code HMATH/33

Co-published with the London Mathematical Society beginning with Volume 4. Members of the LMS may order directly from the AMS at the AMS member price. The LMS is registered with the Charity Commissioners.



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fax: 1-401-455-4046; email: cust-serv@ams.org.
American Mathematical Society, 201 Charles Street, Providence, RI 02904-2294 USA

HISTORY OF MATHEMATICS DAY

The Open University History of Mathematics Day will take place on 2 July 2008 in the Michael Young Building, The Open University, Milton Keynes. The speakers are:

- Jeremy Gray (OU) *How not to run a department: complex analysis at Berlin in the 19th century*
- June Barrow-Green (OU) *From cascades to calculus: episodes in the history of Rolle's theorem*
- Jackie Stedall (Oxford) *Networks of communication in 17th-century England*
- Peter Neumann (Oxford) *Communicating group theory*
- Raymond Flood (Oxford) *Fauvel, Flood and Wilson – a retrospective view*
- Robin Wilson (OU) *Inaugural lecture Communicating mathematics: a historical and personal journey*

For further information email r.j.wilson@open.ac.uk or s.l.griffin@open.ac.uk.

WARWICK EPSRC SYMPOSIUM 2008/09

Challenges in Scientific Computing

Symposium Activities

- Monday 29 September: Launch Day
Organiser: Andrew Stuart
- Monday 8 – Friday 12 December
Computational Neuroscience
Organiser: Jianfeng Feng
- Monday 12 – 16 January
New Directions in Computational PDEs
Organiser: Charles Elliott
- Monday 16 – 20 March
Markov-chain Monte-Carlo
Organiser: Gareth Roberts
- Monday 30 March – Wednesday 1 April
Computational Fluid Dynamics
Organiser: Dwight Barkley

- Monday 1 – Friday 5 June
Molecular Dynamics
Organiser: Mike Allen
- Monday 29 June
Leslie Fox Prize
Organiser: Andrew Stuart
- Tuesday 30 June 2009 – Friday 3 July
Capstone Conference
Organiser: Andrew Stuart
- Monday 24 – Friday 28 August
Quantum Simulations
Organiser: Rudolf R  mer

The symposium organiser is Andrew Stuart. For further information on these and other events see: www2.warwick.ac.uk/fac/sci/math/research/events/2008_2009/symposium or contact the Mathematics Research Centre, Zeeman Building, University of Warwick, Coventry CV4 7AL (email: mrc@maths.warwick.ac.uk, tel: +44 (0)24 7652 8317, fax: +44 (0)24 7652 3548).

HEILBRONN INSTITUTE ANNUAL CONFERENCE

The Heilbronn Institute for Mathematical Research will hold its Annual Conference in the University of Bristol from 19 to 20 September 2008 starting at lunchtime on Friday. Lectures, which will be of general interest, will be given by:

- Alan Baker (Cambridge)
- Martin Bridson (Oxford)
- Frank Kelly (Cambridge)
- Van Vu (Rutgers)
- Nicholas Wormald (Waterloo)

UK graduate students and postdocs who would like to attend and need support should contact Rebecca before **31 July 2008** detailing their requirements, enclosing a brief CV and explaining why they cannot get other support. Further details about attendance can be obtained by contacting Rebecca Ireland (R.E.A.Ireland@bristol.ac.uk).

LONDON MATHEMATICAL SOCIETY

SOUTH WEST & SOUTH WALES REGIONAL MEETING

**Civil and Computational Lecture Theatre, Talbot Building,
Swansea University**

Monday 15 September 2008

Nicola Fusco (Naples) *Equilibrium configurations of strained films:
Existence, regularity and qualitative properties*

István Gyöngy (Edinburgh) *Numerical solutions of optimal stopping and
control problems*

Bert Peletier (Leiden) *Dynamical systems in pharmaceutical sciences*

There will be a reception and dinner afterwards. For registration,
further details and to reserve a place at the dinner, see the webpage
www-maths.swan.ac.uk/staff/vm/LMS-regional or contact V. Moroz
(V.Moroz@swansea.ac.uk).

The meeting will be followed by a workshop from 16 to 18 September on
The Calculus of Variations and Nonlinear Partial Differential Equations.
The workshop will address new trends in the modern theory and
applications of nonlinear partial differential equations and the calculus
of variations. Particular areas will include quantitative and qualitative
analysis of nonlinear elliptic and parabolic partial differential equations,
existence and regularity problems, variational and PDE-related numerical
methods in material microstructures.

There are funds available to contribute to the expenses of members of the
LMS or research students to attend the meeting and workshop. Requests
for support can be expressed on the on-line registration form.

For information on scientific questions or for information on
organisational matters contact V.A. Liskevich (v.a.liskevich@swansea.ac.uk)
or K. Zhang (k.zhang@swansea.ac.uk).

NEW DIRECTIONS IN NONCOMMUTATIVE GEOMETRY

A two-day meeting in honour of Professor Roger Plymen on the occasion of his 65th birthday will take place from Thursday 10 to Friday 11 July 2008 in the School of Mathematics, Manchester University. This workshop on *New directions in noncommutative geometry* is part of a series of conferences taking place in MIMS (Manchester Institute for Mathematical Sciences) throughout 2008. The following speakers have agreed to give talks:

- Anne-Marie Aubert (CNRS, France)
- Paul Baum (Penn State, USA)
- Nigel Higson (Penn State, USA)
- John Hunton (Leicester)
- Ralf Meyer (Göttingen, Germany)
- Graham Niblo (Southampton)
- John Roe (Penn State, USA)
- Maarten Solleveld (Göttingen, Germany)

The meeting will start at 9:00 on Thursday and end at 5:30 on Friday, with a conference dinner on the Thursday evening in the Tai Pan restaurant. Financial support has been provided by MIMS and the London Mathematical Society. For further information, contact the organizer Jacek Brodzki (j.brodzki@soton.ac.uk) or visit the website www.mims.manchester.ac.uk/events/workshops/NCG08.

HOMOGENISATION THEORY

A two-day workshop on *Non-classical, boundary and localisation phenomena in mathematical homogenisation* will take place from 26 to 27 August 2008 at the Cardiff School of Mathematics, Cardiff University, bringing together established experts and exciting new talent from analysis and applied mathematics. The meeting will outline the recent advances and immediate challenges in the mathematical analysis, both linear and non-linear, of the emergent properties in heterogeneous (or 'microstructured') media; in particular:

- *Models exhibiting non-locality and higher-order phenomena*
- *Non-uniformly elliptic and high-contrast periodic problems, and their applications in solid mechanics and wave propagation*
- *Heuristic and rigorous approaches to boundary concentration effects in multi-scale media*

The invited speakers are internationally recognised experts in the following broad areas:

- *Mathematical theory of homogenisation*
- *Spectral theory for periodic PDEs*
- *Calculus of variations*
- *Asymptotic methods for multi-scale problems*

The workshop will involve ten one-hour talks over two days, and several one-hour discussion sessions. It is hoped that both experienced researchers and those new to the areas spanned by the workshop will benefit from the exchanges. Confirmed speakers are:

- M. Camar-Eddine (Rennes) *Calculus of variations; closure under homogenisation*
- I. Capdeboscq (Oxford) *Homogenisation, wavelets; composite materials*
- I. Kamotsky (Bath) *Problems on singular domains; spectral theory; photonics*
- G. Mischuris (Aberystwyth) *Asymptotic methods in mechanics; composite materials*
- M. Neuss-Radu (Heidelberg) *Boundary and interface effects in homogenisation*
- G. Panasenko (St. Etienne) *Asymptotic methods in homogenisation; partial domain decomposition*
- W. Parnell (Manchester) *Homogenisation; wave propagation in periodic composites*
- A. Puchugin (Brunel) *Higher-order and boundary effects in the mechanics of composites*
- E. Zuazua (Madrid) *Concentration effects; spectral theory of PDEs; applied mechanics*

A limited amount of support is available to UK-based PhD students. The meeting is supported by the London Mathematical Society and the Wales Institute for Mathematical and Computational Sciences. For further information, email K. Cherednichenko (CherednichenkoKD@cardiff.ac.uk).

CETL-MSOR CONFERENCE

The CETL-MSOR Conference 2008 (Continuing Excellence in the Teaching & Learning of Maths, Stats & OR) *Shaping the Future of Maths & Stats in Higher Education* will take place at Lancaster University from Monday 8 to Tuesday 9 September 2008.

The aim of this conference is to promote, explore and disseminate emerging good practice and research findings in mathematics and statistics support, teaching, learning and assessment. CETL-MSOR 2008 will appeal to all those teaching mathematics, statistics or numeracy, whether this is to specialist mathematics students or students studying components of mathematics within their degree programmes (such as bioscience, chemistry, computer science, economics, engineering, nursing, physics, psychology, social work, etc.).

The conference will explore not only

the issues at the transition to university, but any issues throughout the entire student learning experience – from foundation year through to postgraduate level. This will be achieved by a combination of key-note speeches, plenary sessions, hands-on demonstrations, workshops, poster sessions and discipline-specific discussion sessions.

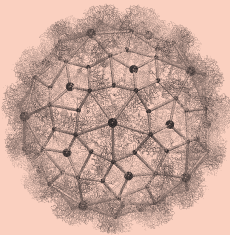
The organising committee welcome the submission of abstracts for presentation (20 minutes), workshop (60 minutes) or poster sessions under any of the following themes:

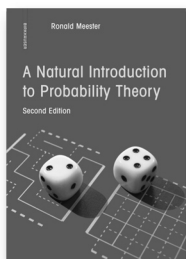
- Supporting the specialist student in mathematics and statistics
- Mathematics and statistics support for the non-specialist
- Innovative uses of technology
- Pedagogic research
- Supporting students with disabilities
- Innovation in teaching and learning
 - Postgraduate training and support
 - Graduate skills and employability

The call for abstracts is now open. To submit an abstract, download the submission template from the website and email it to conference@mathstore.ac.uk. Ensure that all co-authors' details are included in your abstract, as this will form the basis of the conference programme. Abstracts must be submitted by **Friday 13 June 2008**. Registration for this conference will open on 1 July 2008.

Full residential-rate conference fee (including all conference fees, B&B, lunches and refreshments throughout the two days and the conference dinner) is £129. Non-residential rate on application. For further details, please see www.mathstore.ac.uk/conference or email conference@mathstore.ac.uk.







A Natural Introduction to Probability Theory

Meester, R., Vrije Universiteit
Amsterdam, The Netherlands

„Most textbooks designed for a one-year course in mathematical statistics cover probability in the first few chapters as preparation for the statistics to come. This book in some ways resembles the first part of such textbooks: it's all probability, no statistics. But it does the probability more fully than usual, spending lots of time on motivation, explanation, and rigorous development of the mathematics.... The

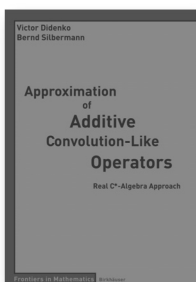
exposition is usually clear and eloquent.... Overall, this is a five-star book on probability that could be used as a textbook or as a supplement.

— MAA online

2nd ed.
2008. X, 197 p. Softcover
GBP 19.00 / EUR 24.90
ISBN 978-3-7643-8723-5

BIRKHAUSER

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Approximation of Additive Convolution-Like Operators

Real C^* -Algebra
Approach

Didenko, V., University
Brunei Darussalam, Brunei /
Silbermann, B., TU Chemnitz,
Germany

This book deals with numerical analysis for certain classes of additive operators and related equations, including singular integral operators with conjugation, the Riemann-Hilbert problem, Mellin operators with

conjugation, double layer potential equation, and the Muskhelishvili equation. The authors propose a unified approach to the analysis of the approximation methods under consideration based on special real extensions of complex C^* -algebras. The list of the methods considered includes spline Galerkin, spline collocation, quallocation, and quadrature methods.

2008. Approx. 320 p. Softcover
GBP 38.50 / EUR 49.90
ISBN 978-3-7643-8750-1
Frontiers in Mathematics

All prices are net prices subject to local VAT, recommended and subject to change without notice.

www.birkhauser.ch

RECORDS OF PROCEEDINGS AT MEETINGS

REGIONAL ORDINARY MEETING

held on Monday 31 March 2008 at the University of Manchester. At least 45 members and visitors were present for all or part of the meeting.

The meeting began at 2.30 pm, with the President, Professor E.B. DAVIES, FRS, in the Chair. Nine people were elected to Ordinary Membership: H. Broersma, M.G. Cowling, S. Dendrinis, T. Hausel, O. Lakkis, S. Lawrence, P. Paajanen, T. Pirashvili, C. Wuthrich; ten were elected to Associate Membership: D.J.J. Devlin, D.G. Ferguson, T.J. Grant, K.I. Lee, B. Li, A. McNaney, Z. Mohammed, A.J. Peden, S. Saito, D.J. Thompson.

The Records of the Proceedings of the Society Meetings held on 23 November 2007 and 7 January 2008 were signed as correct records.

Two members signed the book and were admitted to the Society.

Professor R.J. SHARP introduced a lecture given by Professor M. Field on *Rates of mixing for flows*.

After tea, Professor R.J. Sharp introduced a lecture given by Professor U. Hamenstädt on *Bowen's construction for the Teichmüller flow*.

Professor Davies expressed the thanks of the Society to the University of Manchester and the speakers for putting on such an excellent meeting.

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NORTHERN REGIONAL MEETING AND WORKSHOP 2008

A Northern Regional Meeting of the LMS took place on Monday 31 March at the University of Manchester. It was the opening event of a workshop on Ergodic Theory and Geometry held on the subsequent four days, organised by Mark Pollicott (University of Warwick) and Richard Sharp (University of Manchester). The Monday meeting was attended by about 45 LMS members and visitors. It began with LMS President Brian Davies welcoming those present. Two new members of the LMS took the opportunity to sign their names in the Members' Book to much applause from the audience.

With business matters taken care of, Mike Field (University of Houston) gave the first talk of the meeting on *Rates of mixing for flows*. With a clear exposition and excellent slides, Mike explained material from the pioneering results in the field, through to the many open problems that are challenging researchers today. Along the way, Mike outlined his own impressive contribution.

The second talk of the LMS meeting was delivered by Ursula Hamenstädt (Universität Bonn) who described Bowen's construction for the topical area of the Teichmüller flow. She began by reviewing some classical and

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influential constructions of Bowen and Margulis, originally developed for Anosov diffeomorphisms and flows. After introducing the Teichmüller flow, an object of great current interest to geometers and dynamists alike, she explained the analogues of the classical constructions which carry through to this new setting. Equally, Ursula pointed out some interesting non-classical dynamical phenomena which are particular to the Teichmüller flow and provide obstructions to applying the classical theory. Some open problems were outlined.

With the LMS meeting successfully concluded, it was time for the conference banquet at the Tai Pan Chinese restaurant, a mere hop across the road from the mathematics department. With the etiquette challenges posed by the crispy duck pancakes successfully taken care of, the Workshop resumed on Tuesday morning. Although it is regrettably not possible to describe here all of the talks that took place, here is a selection which illustrates the flavour of the workshop.

The first talk was *Differentiability of Gibbs distribution functions via thermodynamic formalism* by Marc Kesseböhmer (Universität Bremen). Marc set the tone of the conference, explaining results which used dynamical methods to solve a geometric problem. Strong talks followed by Gilles Courtois (École polytechnique) who made *A remark on Margulis' lemma* and Carlangelo Liverani (Università di Roma 'Tor Vergata') who described some recent and exciting developments of *Transfer operator methods in dynamical systems*.

One highlight of Wednesday was *Characterisation of Riemannian metrics on T^2 with and without positive entropy* by Eva Glasmachers (Ruhr-Universität Bochum), who combined, even in the title of her talk, two of the major themes of differential geometry and ergodic theory.

On Thursday, with talks by Samuel Lelievre (Université Paris-Sud) and Corinna Ulcigrai (University of Bristol), the conference returned to the topic of flat surfaces and the Teichmüller flow. While the first talk focused on some geometric results, the second described some dynamical properties. The conference closed on Friday afternoon with a talk by Yves Guivarc'h (Université de Rennes 1) whose wide-ranging presentation brought the meeting to an exciting conclusion.

The workshop demonstrated the richness of the intersection between ergodic theory and geometry with a fruitful interchange between experts in the two areas (and those that everyone wanted to talk to – expert people in both areas!). The many questions asked by the audience in talks can only be indicative of a vibrant conference, where even established experts were learning something new. Mathematical discussions were continued in the university area's many cafes and restaurants and the unofficial conference public house the 'Lass o' Gowrie'. The workshop was a great success.

Dan Thompson
University of Warwick

WOMEN IN MATHEMATICS DAY

Women from around the country gathered for the annual Women in Mathematics Day at De Morgan House on 25 May. It attracted an audience of over 50 and hosted many excellent speakers from different stages in their careers.

The morning saw three fascinating talks from speakers in a wide range of areas of mathematics and this diversity was reflected throughout the rest of the day. Hilary Ockendon (Oxford) started us off with a talk entitled *Spinning and weaving through industrial mathematics*, followed

by Alicia Kim (Bath) on *To optimise or not to optimise: An engineer's perspective*, and then the morning session concluded with Gianne Derks (Surrey) who spoke to us about *Stability of localised waves and fronts*.

During lunch there was a chance to browse the posters submitted and chat to everyone to get to know them and their work. Then a return to the talks to listen to PhD and postdocs in the earlier stages of their careers explained what they are working on. Speaking to people during lunch and afterwards it was clear that all the talks and presentations were well received and sparked several discussions following what we had been hearing about and also on the subject of other people's work which gave the chance to enjoy the variety of research that women in mathematics do.

It was a fantastic opportunity for women in mathematics to meet and share their research and experiences. Mathematics



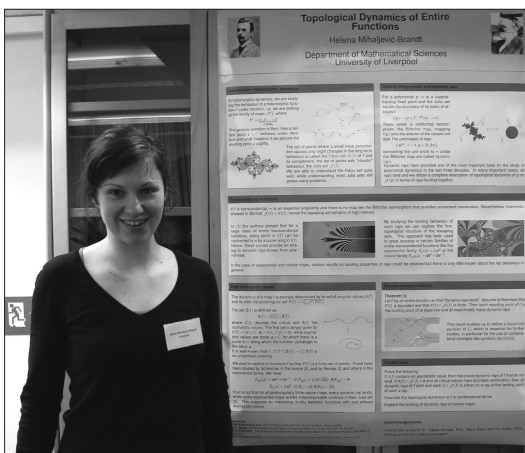
Gianne Derks

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departments with very small numbers of women are a common scenario and so it was a great chance for myself and other PhD students to get to know one another and those women who are further into their careers. The day was followed by the announcement of the winner of the poster competition: *Topological dynamics of entire functions* by Helena Mihaljevic-Brandt (a PhD student from Liverpool), who won £50 worth of book tokens. Then those that were able to stay went for an informal dinner together in the evening.

Thanks must go to Isabelle Robinson (LMS Administrative Officer) together with the Scientific Organiser, Dr Jennifer Scott (Rutherford Appleton Laboratory and member of the LMS Women in Mathematics Committee) who organised the event.

Victoria Crockett
Exeter University



Helena Mihaljevic-Brandt and the winning poster

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Professor Lisa Jardine CBE (left) with a crowd anxious to view the Collection

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PHILIPPA FAWCETT COLLECTION RECEPTION

The annual Women in Mathematics Day was augmented this year by a reception to mark the launch of the 'Philippa Fawcett Collection'. The Collection was launched by Professor Lisa Jardine CBE to an audience including

representatives of British Society for the History of Mathematics, the Royal Astronomical Society, the Mathematical Association and many others keen to view the displays and find out more about the Collection and the Society's work in this area.



Dr A.E.L. Davis, who donated the Collection

The Philippa Fawcett Collection comprises almost 200 books which were written by or about female mathematicians working before 1940, including some dating from before 1868, when no women were able to attend a university or to obtain any formal mathematical training. The books were donated to the Society by Dr A.E.L. Davis, a historian of mathematics who has been a lecturer at the Open University. She said "The Collection is a testament to the dedication

and talent of these women who were not permitted to undertake proper training simply because of their sex. They often worked in isolation, without the support of a mathematical community. Their contribution has been vital to opening opportunities in mathematics to women today, although there is still a great deal to be done."

Today, women are quite well represented in the mathematical sciences at undergraduate level, comprising close to 40% of the student body in UK universities, but just 15 of the 520 professors of mathematics in the UK are female (2.8%).

Professor Alice Rogers, LMS Vice President, said "We are delighted that Dr Davis has donated this important collection to the Society. These books – and the life stories of their authors – are an inspiration to us all."

To arrange to view the collection, or for further information on the books available, please contact librarian@lms.ac.uk.

REVIEWS

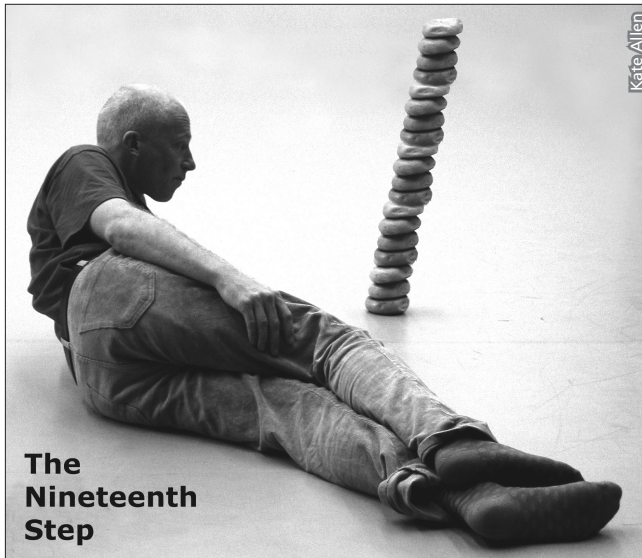
THE 19TH STEP RESEARCH PERFORMANCE Studio Theatre, Laban, London, 12 April 2008

Mathematical proofs can be presented in many forms: visually, algebraically, on a blackboard or on paper, but I had never expected to see a proof presented in dance. So for me, seeing Marcus du Sautoy dance a proof that $\sqrt{3}$ is irrational was the highlight of this absorbing evening, which presented a collaboration between composer Dorothy Ker, choreographer Carol Brown, sculptor Kate Allen and mathematician Marcus, which took as its starting point three Borges short stories – a natural meeting place for the diverse disciplines involved. The staging made use of the geometry of multi-dimensional space, with blackboards becoming floor becoming solids,

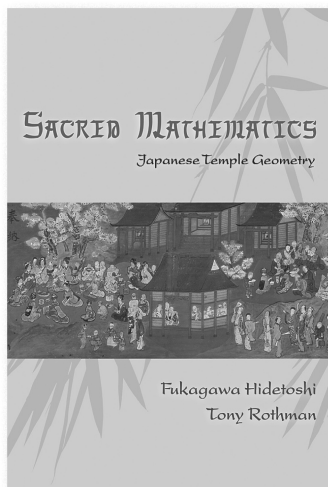
and featured piles of books with covers of 'maths book yellow'.

The performance was followed by a discussion with the audience (part of the research element of this project, which is supported by EPSRC and the Calouste Gulbenkian Foundation as well as the participants' institutions). One of the audience, fittingly given the venue, made connections between the piece and Rudolf Laban's ideas about the mathematical basis of dance. Much of the discussion focused on how the artists responded to the mathematical

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Marcus du Sautoy, behaving irrationally



Sacred Mathematics

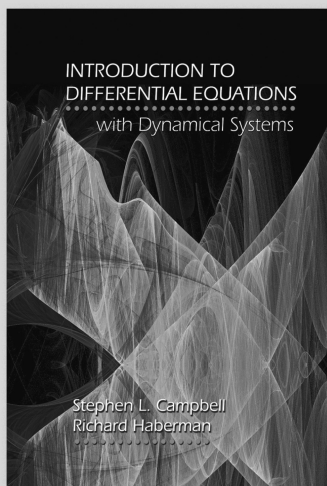
Japanese Temple Geometry

Fukagawa Hidetoshi & Tony Rothman

With a foreword by Freeman Dyson

Between the seventeenth and nineteenth centuries Japan was totally isolated from the West by imperial decree. During that time, a unique brand of homegrown mathematics flourished, one that was completely uninfluenced by developments in Western mathematics. People from all walks of life—samurai, farmers, and merchants—inscribed a wide variety of geometry problems on wooden tablets called *sangaku* and hung them in Buddhist temples and Shinto shrines throughout Japan. *Sacred Mathematics* is the first book published in the West to fully examine this tantalizing—and incredibly beautiful—mathematical tradition.

Cloth \$35.00 978-0-691-12745-3



Introduction to Differential Equations with Dynamical Systems

Stephen L. Campbell & Richard Haberman

This concise and up-to-date textbook addresses the challenges that undergraduate mathematics, engineering, and science students experience during a first course on differential equations. Stephen Campbell and Richard Haberman—using carefully worded derivations, elementary explanations, examples, exercises, and figures rather than theorems and proofs—have written a book that makes learning and teaching differential equations easier and more relevant. The book also presents elementary dynamical systems in a unique and flexible way that is suitable for all courses, regardless of length.

Cloth \$95.00 978-0-691-12474-2



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ideas, but the influence presumably isn't all one way and I should have asked how the collaboration is influencing Marcus's mathematics practice – perhaps his next book will tell us!

I'm not qualified to say how successful the piece was as contemporary dance, something for which I have absolutely no natural feeling. But it undoubtedly succeeded in showing that "the tools which mathematics uses for conceiving space can be explored through musical, choreographic and sculptural content, text and formal structures". The project website www.the19thstep.co.uk/ includes a blog in which we can see how the collaborators' ideas develop: this makes fascinating reading.

A.J.S. Mann

University of Greenwich

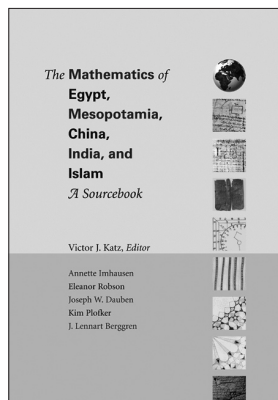
The Mathematics of Egypt, Mesopotamia, China, India, and Islam: A Sourcebook, Victor J. Katz, Annette Imhausen, Eleanor Robson, Joseph W. Dauben, Kim Plofker, J. Lennart Berggren (eds), Princeton University Press, 2007, 712 pp, £44.95, ISBN 0-691-11485-4.

Recent years have seen an increasing interest in non-Western mathematics amongst teachers and students in the history of mathematics, but until now a lack of translated and accessible source material has severely hindered the exploration or teaching of such topics. This new edition from Princeton, of mathematical sources spread geographically from Mesopotamia to China, goes a long way toward addressing that problem. The five section editors (Imhausen, Robson, Dauben, Plofker, Berggren) are all outstanding experts in their own

fields, with many years' experience of reading, translating, and understanding the mathematics of their respective cultures. Each has selected and annotated representative texts, offering the reader not only the material itself but also the findings and interpretations of recent scholarship. Reading this book is thus rather like attending a lecture course by a series of world class scholars, a privileged insight into otherwise almost incomprehensible material.

Each editor has written in his or her own style, and there are five distinct voices in the book, with no attempt to force the material into a common mold. Nevertheless a certain unity is achieved through the fonts and styles used throughout to distinguish the various levels of text: source material, contemporary commentary, modern commentary, and occasionally modern mathematical equivalents. Tables and timelines have also been helpfully provided for the non-expert reader. Many of the sources, particularly those from Egypt and Mesopotamia, have been newly translated for this volume.

One of the dangers, perhaps, of dividing the book into distinct sections is to overlook the complex matter of dissemination (or lack of it) of mathematics across temporal and geographical boundaries. Indeed, in many cases all too little is or ever can be known. Individual editors, however, have addressed the subject where possible, with sections, for instance, on the independence of the Mesopotamian mathematics from the later Classical tradition (Robson p.60), the mathematical interactions of India with China, Greece and Baghdad



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(Plofker p.434), and the mutual effects of the eventual meeting with the West in both India and China (Dauben p.366, Plofker p.507). For me, these were some of the most interesting sections of the book.

This book is a very welcome contribution to modern scholarship in the history of mathematics and should be an essential addition to every academic library and the personal bookshelves of anyone with an interest in the global history of mathematics.

Jackie Stedall
The Queen's College, Oxford

A Mathematical Mosaic: Patterns & Problem Solving by Ravi Vakil, Brendan Kelly Publishing Inc., 2008, 288 pp, \$19.95, ISBN 978-1-895997-28-6.

This unusual text is a logbook of mathematical beachcombing. It is packed with curiosities, fragments of elementary mathematics which lift the spirit and put a smile on your face. I recommend it, but with reservations.

Even after half a lifetime in the mathematics trade, I found that there were some items I had not seen before. That was good. However, I have qualms. Looking at the familiar material, I recall that I had enjoyed the beachcombing myself, and the occasional yelps of delight as I discovered or read some stunning piece of elementary mathematics, or learned it from a colleague or perhaps in a conference bar. By comparison with David Acheson's splendid *1089 and All That* this text is far more eclectic, and in consequence covers material in less depth.

If I had read this book as a

child, I would never have had the repeated pleasure of the accidental and casual discovery of much of its contents and so would have had a poorer life. In fairness, if you don't plan to spend your life thinking about mathematics, but rather plan to read some good stuff and move on, this rich fare may be exactly what you are looking for.

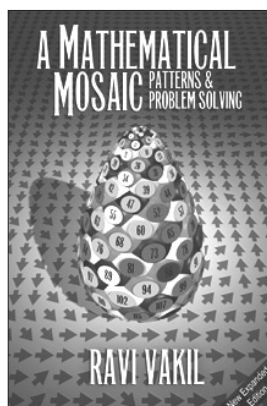
Now for less self-indulgent criticism. The typesetting is incontinent. Fonts come and go, and jostle against one another in an unpleasant frenzy. No attempt is made to contain the vice of coloured blocks of green background.

The book is also populated with small biographies of a bizarre assortment of characters, a mixture of mathematicians from the Hall of Fame, and a collection of more contemporary mathematicians chosen, I fear, because the author happens to know them. This is not to belittle these modern figures, many of whom have done excellent work. Rather I am concerned that a young or lay reader might confuse the standing of various mathematicians in the book.

The text consists of a very large number of fragments of mathematics, and it would be exhausting to list the topics mentioned. However, to give the flavour, here are just a few examples selected for no good reason: chessboard colouring, the game of *nim*, Napoleon's theorem in geometry, the falling ladder problem, the water and wine puzzle and magic squares.

In summary, I found this an enjoyable but unsatisfying book. Librarians might be advised to store it on the top shelf.

Geoff Smith
University of Bath



EPSRCThe London
Mathematical
Society

Topics in Geometric Group Theory

LMS–EPSRC Short Course

Heriot-Watt University, 1–5 September 2008

Organiser: Dr Richard Weidmann

Course outline and prerequisites

The aim of this course is to expose research students to some important ideas and techniques of geometric group theory. While recent results in the field will be discussed, the courses will have an emphasis on engaging with the underlying techniques and understanding the basic examples.

The lecture courses will only assume some basic group theory, elementary graph theory and the concept of metric spaces.

The course will consist of three lecture courses of five lectures each:

- *Automorphisms of free groups* (Martin Lustig, Marseille)
- *Quasi-isometries of spaces and groups* (Panos Papasoglu, Athens)
- *Graphs of groups and foldings* (Richard Weidmann, Heriot-Watt)

There will further be two guest lectures given by Martin Dunwoody (Southampton) and Vincent Guirardel (Toulouse). In addition tutorial sessions will be run by postdoctoral researchers in the field.

Further information on the course is available at www.ma.hw.ac.uk/~richardw/lmscourse.html.

Application

Applications should be made using the registration form available on the Society's website at: www.lms.ac.uk/activities/rmc/sc/42bposter.html.

The closing date for applications is **Friday 4 July**. Numbers will be limited and those interested are advised to make an early application.

Fees

- All research students registered at a UK university will be charged a registration fee of £100. (In the case of EPSRC-funded research students this fee should be paid by their departments from their DTA; for non-EPSRC research students, their department might be prepared to pay the fee.)
- Overseas students, postdocs and those working in industry will be charged £525 (registration fee of £250 plus subsistence costs of £275).

All participants must pay their own travel costs (for EPSRC-funded students, this should be covered by their DTA).

LMS–EPSRC Short Courses aim to provide training for postgraduate students in core areas of mathematics. Part of their success is the opportunity for students to meet other students working in related areas as well as the chance to meet a number of leading experts in the topic.

EPSRC

The London
Mathematical
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Algebraic Groups and related topics

LMS–EPSRC Short Course

University of Birmingham, 15–19 September 2008

Organiser: Dr Simon Goodwin

Course outline and prerequisites

The theory of algebraic groups, or more generally algebraic Lie theory, finds diverse applications in mathematics and physics. The aim of this course is to provide an introduction to some of the fundamental objects in algebraic Lie theory. The course will require few prerequisites and is intended primarily for UK-based postgraduate students; overseas students and postdocs are also welcome to attend and encouraged to contact the organiser for further information.

The course is centred around three five-hour lecture courses:

- *Finite groups of Lie type and Hecke algebras* (Meinolf Geck, Aberdeen)
- *Modular representations of Lie algebras* (James Humphreys, Massachusetts)
- *Introduction to algebraic groups* (Gerhard Röhrle, Bochum)

There will be additional exercise sessions, and two guest lectures (speakers TBC).

Further information on the course is available at
<http://web.mat.bham.ac.uk/S.M.Goodwin/shortcourse>.

Application

Applications should be made using the registration form available on the Society's website at:
www.lms.ac.uk/activities/rmc/sc/43poster.html.

The closing date for applications is **Friday 11 July**. Numbers will be limited and those interested are advised to make an early application.

Fees

- All research students registered at a UK university will be charged a registration fee of £100.
(In the case of EPSRC-funded research students this fee should be paid by their departments from their DTA; for non-EPSRC research students, their department might be prepared to pay the fee.)
- Overseas students, postdocs and those working in industry will be charged £550
(registration fee of £250 plus subsistence costs of £300).

All participants must pay their own travel costs (for EPSRC-funded students, this should be covered by their DTA).

LMS–EPSRC Short Courses aim to provide training for postgraduate students in core areas of mathematics. Part of their success is the opportunity for students to meet other students working in related areas as well as the chance to meet a number of leading experts in the topic.

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

**ROTATING STRATIFIED TURBULENCE AND
TURBULENCE IN THE ATMOSPHERE AND OCEANS**

8–12 December 2008

in association with the Newton Institute programme entitled
The Nature of High Reynolds Number Turbulence
(26 August to 19 December 2008)

Organisers: Peter Bartello (McGill), Peter Davidson (Cambridge), David Dritschel (St Andrews), Ross Griffiths (Canberra), Keith Moffatt (Cambridge), Joel Sommeria (Grenoble), Kraig Winters (San Diego), Shigeo Yoden (Kyoto)

Theme: The goal of this IUTAM/INI Symposium is to bring recent theoretical, experimental and numerical progress in this field to the community of atmospheric and oceanic scientists who could use it to improve their integrated studies of complex systems. The workshop will consist of 3 days devoted to studies of canonical flows and turbulence in its most theoretically accessible form. This will be followed by 2 days of presentations from the community studying realistic atmospheric and oceanic flows in which turbulence and mixing play an important role, but one involving the full range of complications and numerical constraints. The two groups of people will thereby be encouraged to share perspectives.

Speakers will include:

- F. Busse (University of Bayreuth)
- G. Carnevale (UCSD)
- J-M. Chomaz (CNRS – Ecole Polytechnique)
- J. Herring (National Center for Atmospheric Research)
- D. Holm (Imperial College London)
- J. McWilliams (UCLA)
- P. Rhines (University of Washington)
- J. Riley (University of Washington)

Further information and application forms are available from the web at: www.newton.cam.ac.uk/programmes/HRT/hrtw04.html. Completed application forms should be sent to Tracey Andrew, Programme & Conference Secretary, Isaac Newton Institute, 20 Clarkson Road, Cambridge CB3 0EH or via email to: t.andrew@newton.cam.ac.uk.

Closing date for the receipt of applications is **31 July 2008**.

CALENDAR OF EVENTS

This calendar lists Society meetings and other events publicised in the *Newsletter*. Further information can be obtained from the appropriate *LMS Newsletter* whose number is given in brackets. A fuller list of meetings and events is given on the Society's website (www.lms.ac.uk/newsletter/calendar.html).

JUNE 2008

3-4 Statistical Mechanics for Mathematicians LTCC Intensive Course, London (370)

3-6 Chaotic Modeling, Simulation and Applications Conference, Crete, Greece (369)

6 PANDA, Cambridge (369)

9 **LMS Midlands Regional Meeting, Birmingham (371)**

10-12 Harmonic Analysis and Partial Differential Equations Workshop, Birmingham (371)

16-19 Nordic Conference on Mathematical Statistics, Vilnius, Lithuania (369)

16-20 Gravitational Thermodynamics and the Quantum Nature of Space Time, ICMS Workshop, Edinburgh (369)

17-18 High-dimensional Bayesian Inference LTCC Intensive Course, London (370)

20 Maths Works, London (370)

23-24 New Directions in Analytical and Numerical Methods for Forward and Inverse Wave Scattering Meeting, Manchester (370)

23-27 Geometric Analysis, Elasticity and PDEs Workshop, Heriot-Watt University (367)

23-27 Future Directions in High-Dimensional Data Analysis, INI Workshop, Cambridge (366)

30-1 Jul New Directions in Tomographic Image Reconstruction Workshop, Manchester (369)

30-2 Jul Graph-Theoretic Concepts, Durham (371)

30-4 Jul European Consortium for Mathematics in Industry, University College London (364)

30-10 Jul Mathematical Aspects of Graphical Models, LMS Durham Research Symposium, Durham (368)

JULY 2008

2 History of Mathematics Day, Open University (371)

4 **LMS Graduate Student and Society Meeting, London (371)**

4-5 New Directions in Toric Topology Workshop, Manchester (369)

6-13 ICME 11, Monterrey, Mexico (368)

7-10 Integral Methods in Science and Engineering, Santander, Spain (370)

7-11 Nonlinear Parabolic Equations and Applications, LMS-EPSRC Short Course, Swansea (370)

7-11 Stochastic Partial Differential Equations, LMS-EPSRC Short Course, Imperial College London (370)

7-11 New Horizons in Toric Topology Conference, Manchester (367)

9 **LMS Popular Lectures, London (371)**

10-11 Legacy of John Crank Conference, Brunel University (366)

10-11 New Directions in Noncommutative Geometry Workshop, Manchester (371)

11 Finite p -Groups, Cambridge (371)

13 EWM/EMS Workshop, Amsterdam, The Netherlands (366)

14-18 Fifth European Congress of Mathematics, Amsterdam, The Netherlands (370)

14-24 Computational Linear Algebra for Partial Differential Equations, LMS Durham Research Symposium, Durham (368)

14-25 Anderson Localization Transition Introductory Training Course, INI, Cambridge (364)

14-19 Dec Mathematics and Physics of Anderson Localization: 50 Years After, INI, Cambridge (352)

15-19 Bachelier Finance Society Fifth World Congress, London (365)

16-18 60Miles, Warwick (371)

17 **LMS Meeting, 5ECM, Amsterdam (371)**

21-23 19th Postgraduate Combinatorial Conference, Warwick (368)
21-23 European Postgraduate Fluid Dynamics Conference, Keele (370)
21-25 Algebraic Structures in Geometry and Physics Workshop, Leicester (367)
21-25 Logic and Algorithms ICMS Workshop, Edinburgh (369)
21-1 Aug Computational Algebra De Brún Workshop, Galway (370)
25-31 International Mathematics Competition for University Students, Blagoevgrad, Bulgaria (368)
28-1 Aug Advanced Methods in Linear and Nonlinear Elasticity, LMS–EPSRC Short Course, Keele (370)

AUGUST 2008

4-8 Multiple Dirichlet Series and Applications to Automorphic Forms, ICMS Workshop, Edinburgh (369)
18-22 Anderson Localization and Related Phenomena, INI Workshop, Cambridge (370)
24-26 International Pure Mathematical Conference 2008, Islamabad (370)
25-27 British Topology Day, Belfast (371)
25-29 Singularities, ICMS Workshop, Edinburgh (369)
26-27 Homogenisation Theory Workshop, Cardiff (371)
26-28 Subfactors and Planar Algebras Instructional Workshop, Belfast (368)
26-30 Quadratic Forms, Algebraic Groups, Algebraic Cobordism Conference, Nottingham (370)

SEPTEMBER 2008

1-3 Pairing 2008 Conference, Royal Holloway, University of London (368)
1-5 Topics in Geometric Group Theory, LMS–EPSRC Short Course, Heriot–Watt University (371)
4-6 British Logic Colloquium, Nottingham (370)

5-6 Jordan Structures: Nonassociative Analysis and Geometry Meeting, Queen Mary, University of London (370)
8-9 Shaping the Future of Maths & Stats in Higher Education, CETL–MSOR Conference, Lancaster (371)
8-12 Wall Bounded Shear Flows: Transition & Turbulence, INI Workshop (367)
8-12 Grothendieck–Teichmüller Theory of Dessins d’Enfants, ICMS Workshop, Edinburgh (369)
10-11 New Directions in Skew Product Dynamics Workshop, Manchester (369)
14-18 EUROMECH Fluid Mechanics Conference, Manchester (362)
14-19 Phenomena in High Dimensions Workshop, Lancaster University (364)
15 LMS SW & South Wales Regional Meeting, Swansea (371)
15-19 Algebraic Groups and Related Topics, LMS–EPSRC Short Course, Birmingham (371)
16-18 The Calculus of Variations and Nonlinear Partial Differential Equations Workshop, Swansea (371)
19-20 Heilbronn Institute Annual Conference, Bristol (371)
22-26 Higher Dimensional Algebraic Geometry, ICMS Workshop, Edinburgh (369)
29-3 Oct Inertial-range Dynamics and Mixing, INI Workshop, Cambridge (368)

NOVEMBER 2008

21 LMS AGM, London

DECEMBER 2008

1-5 Large Amplitude Internal Waves, ICMS Workshop, Edinburgh (369)
8-12 Rotating Stratified Turbulence and Turbulence in the Atmosphere and Oceans, INI Workshop (371)
12-13 Joint Meeting with the Edinburgh Mathematical Society, Edinburgh
16-18 Mathematics in Signal Processing IMA Conference, Cirencester (370)

P. FROST

LMS member 1869–1897



Rev. Percival Frost, ScD, FRS, FCPS
Fellow of King's College, Cambridge
Fellow of St John's College, Cambridge