THE LONDON MATHEMATICAL SOCIETY

NEWSLETTER

No. 395 September 2010

Society Meetings and Events

2010

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2011

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LMS COUNCIL DIARY

Friday 2 July 2010

At the start of the Council meeting the President, Angus Macintyre FRS, led us in thanking and saying goodbye to Ivor Goddard, our temporary Executive Secretary. Ivor, who had for many years essentially the same role at the Royal Statistical Society, has done a fantastic job for us, providing stability and good advice to the Council and its Officers as Council recovered from a period of turmoil last year. In a few last wise words Ivor encouraged the LMS to be less internal looking and to punch at its full weight externally. We then took great pleasure in welcoming the new Executive Secretary, Fiona Nixon, to her first Council Meeting. Council's first substantive business (having asked him to leave the room) was unanimously to approve Graeme Segal FRS as President Designate.

As usual, a first significant item was that of President's Business, and Angus summarised a variety of LMS and external engagements carried out on our behalf. A clear highlight, from Angus's language – "marvellous", "real pleasure", "proud of the LMS" – had been chairing the LMS Popular Lectures 2010, given by Dorothy Buck (Imperial) and Matt Parker (QMUL). Angus praised the quality of the lectures and stressed the importance of maintaining high standards in the Popular Lectures series.

We turned to publication matters, with the President putting his signature to a new contract with OUP relating to publication of the *Bulletin*, *Journal*, and *Proceedings* of the LMS. The Publisher Susan Hezlet and the Publications Secretary, John Jones, pointed out that we were very fortunate with the high standard of external advice we had available on the Publications Committee. Under a finance heading, after some discussion and explanations by the Treasurer, Brian Stewart, we approved recommendations from Finance and General Purposes Committee for Membership subscription rates for 2010–11 (increasing by 5%), on Members' journal prices, and on the budget allocation for 2010–11.

Since the last Council meeting the Website Working Group has moved forward significantly and Stephen Huggett, as Chair, reported that an invitation to tender for the website redevelopment had gone out, and shortlisted bidders would be presenting to the group on 29 July, with the plan that a contract be written and signed by mid-August. Meanwhile, we welcome further suggestions from LMS members regarding the new website via the link from www.lms.ac.uk. Stephen also led discussions in his role as Chair of the International Affairs Committee, inviting a steer from Council to the LMS delegates to the International Mathematical Union General Assembly in

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Bangalore in mid-August, where a vote would be taken on whether to set up a permanent IMU office and where. While some members of Council have reserves about this development, the arguments are complex. It seemed best to Council that LMS delegates take a full part in the debate and vote as seems best to them on the balance of the arguments presented.

Reporting on activities of the newly reformed Research Policy Committee which he chairs, Ken Brown explained that its first meeting had been devoted to developing policy documents on UK Mathematical Sciences 'Facts and Figures', 'Funding Mechanisms', and 'Postgraduate Training', drafts of which were presented. The aim was to address several audiences, probably with slightly different versions. These included the mathematics community, the wider world and policy makers, and the International Review of Mathematics (IRM), led by EPSRC, which would take place and report over the coming year. The Council thanked Ken and the committee for the work so far and gave some feedback. Ken explained that the next drafts, prepared particularly with the IRM in mind, would be placed on the LMS website (http://tinyurl.com/34g2olx) for comment from members, and near-final versions would be presented to the next Council meeting at the beginning of October. The Council agreed with Ken's plans for liaison with the Institute of Mathematics and its Applications.

Garth Dales reported as Chair of the Membership *ad hoc* working group which has been formed this year. The group presented a substantial report, evidence of having given considerable thought from first principles on issues such as what the selling points and benefits of membership are, how to undertake a membership drive, and how to develop a more dynamic system of 'departmental representatives' across UK Universities. Interesting was the focus the group put on attracting more members from the applied mathematics community. Council discussed very seriously the question of how the LMS could improve its appeal to this sector, and will be discussing the ideas of the working group again soon.

Simon Chandler-Wilde

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LMS HONORARY MEMBERS

The London Mathematical Society has elected Professor Yvonne Choquet-Bruhat of Université Pierre et Marie Curie, France, to Honorary Membership of the Society, in recognition of her many distinguished contributions to General Relativity, especially for her deep and pioneering work on the Cauchy Problem.

The London Mathematical Society has elected Professor Terence Tao of University of California, Los Angeles, USA, to Honorary Membership of the Society, in recognition of his remarkable achievements in harmonic analysis, the theory of PDE and additive combinatorics.

Full citations for Professor Choquet-Bruhat and Professor Tao will appear in the LMS *Bulletin*.

LONDON MATHEMATICAL SOCIETY
MIDLANDS REGIONAL MEETING

Monday 6 September 2010

Chemistry Building C15, University of Nottingham

Speakers:

Erik Christensen (Copenhagen)
Siegfried Echterhoff (Münster)
Mikael Rørdam (Copenhagen)

Titles and timings to be confirmed.

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

For further details, to register or to reserve a place at the dinner, email the organisers (Wilhelm.Winter@nottingham.ac.uk or Joachim.Zacharias@nottingham.ac.uk). The cost of the dinner will be approximately £30, including drinks.

There will be a subsequent workshop on *C*-algebras,* with special emphasis on classification, from 7 to 10 September. Further details will be posted on: www.maths.nottingham.ac.uk/personal/pmzww/wilhelm_winter/LMS_Regional_Meeting.html.

There are funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting and workshop. Requests for support, including an estimate of expenses, may be addressed to the organisers.

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FIELDS MEDAL 2010

Four mathematicians have been awarded the prestigious Fields Medal by the President of India in a ceremony at the International Congress for Mathematicians in Hyderabad. The Fields Medal is of an equivalent standing within mathematics as the Nobel Prize is within general science. In an eloquent opening address the President of India referred to mathematics as "standing at the helm of all science" and stressed its central importance to the modern world.

The winners were Elon Lindenstrauss of Princeton University, Ngô Bảo Châu of Université Paris-Sud, Stanislav Smirnov of the University of Geneva and Cédric Villani of the Henri Poincaré Institute. Laudations describing their work can be found on the ICM website at www.icm2010.org.in.

The medal is awarded every four years and is restricted to those under 40 years of age. The award to Ngô is particularly welcomed by the LMS as he is a member of the editorial board of *Compositio Mathematica*, which is produced and published by LMS on behalf of its Foundation.

Ngô Bảo Châu's award citation outlines his "brilliant proof" of a long-standing conjecture in number theory known as the "Fundamental Lemma," which lies at the heart of a broad unifying vision of mathematics that Robert Langlands, now at the Institute for Advanced Study in Princeton, New Jersey, initiated in the late 1960s. The Langlands Program, as it is called, ties together virtually all aspects of modern mathematics.

Professor Angus MacIntyre, President of the London Mathematical Society, said, "Ngô's work is an astounding *tour de force* that puts in place a central component in Langland's magnificent conjectures".

Ngô Bảo Châu's proof was praised by the number theorist Peter Sarnak, "It's as if people were working on the far side of the river waiting for someone to throw this bridge across. And now all of a sudden everyone's work on the other side of the river has been proven".

Ngô Bảo Châu's success was selected by *Time* magazine as one of the Top Ten Scientific Discoveries of 2009.

John Johnston
Mathematics Promotion Officer

MATHJAX

A future for publishing mathematics on the web

The online publishing of easily readable mathematics has been a problem since the birth of the internet and most of us have spent time squinting at embedded gifs in abstracts or waited for the full PDF article to open over a slow connection. We wondered when the rest of the world would accept mathml as a standard plug in but knew this was unlikely. The solution to these problems has arrived in a revolutionary form.

MathJax is an open source, Ajax-based web math display solution designed to function across all browsers and operating systems. It was launched in January of this year and the Beta 2 version was released in April. Put simply, this works all on its own and is implemented in javascript. No special plug-ins are required and you do not need to have the fonts on your web browsing machine although the speed of translation from tex source to readable displayed mathematics is much slower without them.

The best way to see what it can do is look at the previews at www.mathjax.org. If you are convinced that this is the future, have a look at the 'community' pages where you may be able to help; bug reporting is very welcome during the beta testing phase.

Dr Susan Hezlet
LMS Publisher

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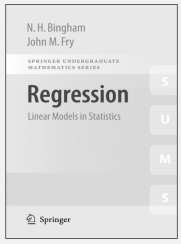

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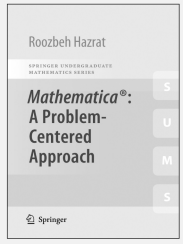

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VLADIMIR ARNOLD

Vladimir Arnold, ForMemRS, Soviet–Russian mathematician, who was elected an Honorary member of the London Mathematical Society in 1976, died in Paris on 3 June 2010, aged 72.

Keith Moffatt and Samson Shatashvili write: Arnold was an extraordinarily gifted mathematician who not only created new areas of mathematics and transformed existing fields, but also influenced the development of generations of mathematicians and mathematical scientists, from high school to the highest research level, via numerous textbooks, public essays, his famous Moscow and Paris seminars, etc. Arnold's literary style, which many have tried to emulate, was exemplary. As a very prominent advocate for mathematics, he took a stand against what he saw as negative trends in the teaching of the subject, expressing his views with vigour and great personal courage.

Arnold was born on 12 June 1937, in Odessa in the former Soviet Union. He was associated with Moscow State University (as a student under A.N. Kolmogorov from 1954 and as a professor from 1965) and with the Steklov Mathematical Institute in Moscow (from 1986); from 1993 he was also a professor in the University of Paris-Dauphine. He was a member of the Soviet (now Russian) Academy of Sciences, and a foreign member of many prestigious academies including The Royal Society and the French Académie des Sciences.

Arnold's start in mathematics was truly spectacular – as an undergraduate student he solved Hilbert's 13th problem on the superposition of continuous functions of several variables. A series of top-level

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papers followed – it is hard to discuss modern mathematics without mentioning Arnold's contributions in diverse fields: Dynamical Systems (Hamiltonian Integrable Systems and Symplectic Geometry, KAM theory, Celestial Mechanics); Hydrodynamics; Real Algebraic Geometry; and especially Symplectic Topology (he invented this, formulated numerous famous conjectures later leading to Floer homology and pseudo-holomorphic curves, etc.) and Singularity/Catastrophe Theory (ADE classification, strange duality – presently recognised as a first instance of mirror symmetry).

Arnold was one of those rare mathematicians who could bring powerful ideas of pure mathematics to bear upon the physical sciences, in such a way as to bring new physical insight to the problems under consideration. Nowhere was this more evident than in his revolutionary geometric approach to the Euler equations of classical fluid dynamics, to which he turned his attention in the mid 1960s. Building on the work of Helmholtz and Kelvin, Arnold obtained general criteria for the linear and nonlinear stability of steady flows. He was the first to recognize the phenomenon of chaos in the famous ABC flow (Arnold–Beltrami–Childress), and its potential for dynamo action; and he later established the link between the helicity invariant of Euler flows and the Hopf invariant of the map $S^3 \to S^2$, bringing powerful topological ideas to bear upon ideal flow theory.

Arnold belonged to a generation of eminent Russian mathematicians born before the War, including (in alphabetic order) L.D. Faddeev, Yu. I. Manin, V.P. Maslov, S.P. Novikov and Ya. G. Sinai. Together with the previous generation of great mathematicians, N. N. Bogolyubov, I.M. Gel'fand, A.N. Kolmogorov, L.S. Pontryagin, and I.R. Shafarevich, to name but a few, they made Russian mathematics the envy of the world.

JAROSLAV STARK

Professor Jaroslav Stark, who was elected a member of the London Mathematical Society on 20 November 1987, died on 6 June 2010, aged 49.

John Elgin writes: Jaroslav Stark was born in Pardubice, to the east of Prague in Czechoslovakia, in 1960 and moved with his family to London following the Russian invasion in 1968. After studying Part III of the Mathematics Tripos, he joined the newly formed Mathematics Institute in Warwick, where he gained a PhD in the emergent field of Dynamical Systems Theory under the supervision of Robert MacKay.

Jaroslav was an Applied Mathematician. As such, he held strongly to the belief that the language of mathematics is the most precise and concise way of making a meaningful statement about any given system. The term 'applied' is important here, since this reflects the need for the mathematician to 'build' a model of the system under study: in particular, how does one construct a model of a biological system without the knowledge of how such systems work? To gain such, Jaroslav took a two-year break to study biology.

In January 2003 he moved to the Mathematics Department at Imperial College, where he founded the mathematical biology group, and in 2007 he became director of the Centre for Integrative Systems Biology at Imperial College (CISBIC).

Jaroslav became a key figure in cross-disciplinary research in the UK, pioneering the use of mathematics to study biological systems. Thanks to his enthusiasm, clever use of images, clarity of thought and crystal-clear prose, the developmental biologists and immunologists he worked with could quickly grasp the implications of his mathematics. This allowed mathematicians and biologists to generate mathematical models which enable them to understand complex biological problems.

Jaroslav is survived by his wife Kate, son Daniel and father Jaroslav.

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ANNUAL LMS SUBSCRIPTION 2010–11

Members are reminded that their annual subscription, including payment for publications, for the period November 2010 – October 2011 is due on **1 November 2010**. By the second week of October members will be sent notification via email or letter, detailing how to pay their subscription. In the case of members who already have a Direct Debit set up, no action need be taken.

Rates

The annual subscription to the London Mathematical Society for 2010–11 is:

- Ordinary membership £51.50
- Concessions on Ordinary membership:
  - Reciprocity £25.75
  - Career break or part-time working £13.50
- Associate membership £13.50

Members also have the option to pay their European Mathematical Society subscription via the LMS (£23) and subscribe to the *Journal of the EMS* (£88).

The member prices of the Society's journals for 2011 are:

	Print	Online*	Print+Online*
Bulletin	£53.00	£42.00	£64.00
Journal	£101.00	£81.00	£121.00
Proceedings	£106.00	£85.00	£127.00
Nonlinearity	(except N. America) £72.00		(N. America) £93.00
JCM (electronic)	—	free	—

(*inclusive of VAT)

Members now have the choice of taking an electronic subscription to the *Bulletin*, *Journal* or *Proceedings* of the LMS at a discount of 20% on the standard price for a print subscription. Alternatively, members may receive both the print and electronic versions for an additional 20% above the price of the print subscription. Once an order for an electronic version has been processed by the LMS, your email address will be passed to Oxford University Press who will contact you with details on how to access the journals.

Isabelle Robinson
Group Head (Society & Grants)

EPSRC INTERNATIONAL REVIEW OF MATHEMATICAL SCIENCES

Open call for submissions

The EPSRC is conducting an International Review of Mathematical Sciences in December 2010. The Review is intended to help benchmark UK research in mathematical sciences against the rest of the world, and to highlight any gaps or missed opportunities. The Review will provide a broad perspective on the research being done and will involve the relevant learned institutions and other research councils. The information collected will help inform the development of future strategies by EPSRC and other key stakeholders.

A steering committee, chaired by Professor Tim Pedley, will oversee the Review and collect relevant information and data. There will then be a review week during which an International Panel, chaired by Professor Margaret Wright (Courant Institute, New York University), will meet with some of the leading mathematical scientists from over 40 institutions in the UK. Following the review week, a written report will be prepared and the findings presented at a Town Meeting in January 2011.

Relevant institutions will be approached directly to give evidence, but individual LMS members can contribute using the 'Form for the Submission of Evidence'. This form should be submitted to MathematicsIntReview@epsrc.ac.uk by **30 September 2010**. For more information and to download the submission form, visit the relevant EPSRC webpage via http://tinyurl.com/2vvog8m.

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MATHEMATICS POLICY ROUND UP

Council for the Mathematical Sciences: new chair

Professor Frank Kelly, FRS will take over from Professor Sir David Wallace CBE, FRS, FREng as independent chair of the Council for the Mathematical Sciences in October 2010. Professor Kelly is Professor of the Mathematics of Systems in the University of Cambridge, and Master of Christ's College. From 2003 to 2006 he served as Chief Scientific Adviser to the United Kingdom's Department for Transport. He is a trustee of the policy-research group RAND Europe and a non-executive director of Cambridge-based software company Autonomy.

Chairs of Commons select committees

(All members had not yet been announced at the time of writing)

- House of Commons Science and Technology Committee: Andrew Miller, Labour MP for Ellesmere Port and Neston since 1992
- House of Commons Education Committee: Graham Stringer, Conservative MP for Beverley and Holderness since 2005
- House of Lords Science and Technology Committee: Lord Krebs (chair), Lord Broers, Lord Crickhowell, Lord Cunningham, Baroness Hilton, Lord Methuen, Baroness Neuberger, Lord Patel, Baroness Perry, Lord Rees, Earl of Selbourne, Lord Wade, Lord Warner, Lord Winston

A-level mathematics review

In June, the Minister of State for schools, Nick Gibb, MP, announced that the government review of A-levels and other level 3 qualifications in mathematics subjects will not continue. This follows in the wake of the new government's decision to abolish the Qualifications and Curriculum Development Agency. One consequence of this is that the Advanced Extension Awards will remain in place "until the new qualifications development procedures are in place and the mathematics suite can be reviewed through them".

Big Bang

A 'Big Bang Maths Gang' is being formed to ensure that mathematics is well represented at the third *Big Bang Young Scientists and Engineers Fair* which will take place 10–12 March 2011 in London. In the previous two fairs there has been concern that mathematics isn't getting a good showing. There are two big mathematics messages to convey:

- mathematics is an important and interesting subject in itself
- mathematics is vital to all the STEM (science, technology, engineering and mathematics) work on display.

The committee will liaise between the mathematics community and the Big Bang to ensure mathematics proposals are not overlooked and have the necessary support to develop them to ensure they can take part. In a meeting between Big Bang organisers (the LMS, MPU and IMA) orchestrated by Kate Bellingham, national STEM careers co-ordinator, it was agreed that floor space and workshop slots and a theatre performance would be reserved for the mathematical sciences. The agreement will not preclude mathematics proposals being submitted to the main floor of the exhibition.

For more information on the Maths Gang contact John Meeson (john.meeson@ima.org.uk) or visit the website www.thebigbangfair.co.uk. The LMS and IMA are looking into making small enabling grants available to help those taking part in the fair.

ACME letters to Education Secretary

Dame Julia Higgins, chair of the Advisory Committee on Mathematics Education (ACME), has been working hard to ensure that Michael Gove, the new Secretary of State for Education does not act in a way

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that compromises mathematics education. Following a speech given by Mr Gove at the beginning of July, when he laid out proposals to replace the current modular A-levels with traditional exams at the end of two years in order to revive the "art of deep thought", Dame Julia gave a stern warning that making A-level mathematics harder will mean fewer students take the qualification. She pointed to the experience of Curriculum 2000, where changes to the curriculum caused a 20% drop in A-level candidates and after which entry numbers took six years to recover. She warned that such drops could threaten the future of some university mathematics departments. The ACME letter also explained that both modular and linear assessment models could provide strong mathematical training. In June, Dame Julia wrote to Mr Gove laying out the key issues in the mathematics education landscape, offering ACME's help and support in developing "new and effective policies in the area of mathematics education". The letters are available to read at www.acme-uk.org.uk.

Caroline Davis
Mathematics Promotion Officer

Mathematics Promotion Unit

This is the last policy round up to be written by Caroline Davis, Mathematics Promotion Officer, who left the London Mathematical Society in August to join the Institute of Physics. The position will be temporarily covered by Dr John Johnston, a freelance writer who has worked for The Royal Society of Chemistry, The Royal Society, and the Institute of Mathematics and its Applications. He can be contacted at mpu@lms.ac.uk.

We thank Caroline for all her hard work during her time with the Society and wish her every success in her new position

Fiona Nixon
Executive Secretary

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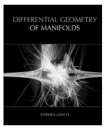

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LMS SPITALFIELDS DAY

Geometry & Algebra

Friday 17 September 2010

Royal Society of Edinburgh, 22 George Street, Edinburgh

11.00 **Sir Michael Atiyah** (Edinburgh)
The Hodge signature theorem: past, present and future

15.00 **Friedrich Hirzebruch** (Bonn)
125 years of the Schubert calculus

16.00 Tea and coffee served

16.30 **Andrew Ranicki** (Edinburgh)
Aspects of quadratic forms in the work of Hirzebruch and Atiyah

The Spitalfields Day celebrates the election in May 2010 of Professor Hirzebruch to an Honorary Fellowship of the Royal Society of Edinburgh. The meeting is supported by the LMS, the Edinburgh Mathematical Society, the Royal Society of Edinburgh and the International Centre for Mathematical Sciences.

These lectures are aimed at a general mathematical audience, and should be accessible to graduate students. All interested, whether LMS members or not, are most welcome to attend this event, but are asked to register beforehand. Further information is available on the website: www.icms.org.uk/workshops/hirzebruch.

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THE ROYAL SOCIETY OF EDINBURGH

The Royal Society of Edinburgh, Scotland's National Academy, is Scottish Charity No. SC000470.

The London Mathematical Society believes that it is important for recent developments in specialist topics to be made known to the general mathematical community, and, in particular, to research students. It therefore provides funds to the organisers of these meetings so that they can provide a day of survey lectures, accessible to a general mathematical audience.

These days are called Spitalfields Days, in honour of the Spitalfields Mathematical Society, a precursor of the London Mathematical Society which flourished from 1717 to 1845.

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INTERNATIONAL SOCIETY ON GENERAL RELATIVITY AND GRAVITATION

Professor Malcolm MacCallum (Director of the Heilbronn Institute, Bristol) has been elected as President of the International Society on General Relativity and Gravitation for a three-year term from July 2010. The only previous UK-based holders of this office were Professor Dennis Sciama, FRS, and Professor Sir Roger Penrose, FRS. For further information about the Society visit the website at www.isgrg.org.

RAMANUJAN PRIZE

Call for Nominations

The International Centre for Theoretical Physics (ICTP) has created the Ramanujan Prize for young mathematicians from developing countries. The prize is funded by the Niels Henrik Abel Memorial Fund. The prize is awarded annually to a researcher from a developing country less than 45 years of age on 31 December of the year of the award, who has conducted outstanding research in a developing country. Researchers working in any branch of the mathematical sciences are eligible. The prize carries a $15,000 cash award and travel and subsistence allowance to visit ICTP for a meeting where the prize winner will be required to deliver a lecture. The prize is usually awarded to one person, but may be shared equally among recipients who have contributed to the same body of work.

ICTP awards the prize through a selection committee of five eminent mathematicians appointed in conjunction with the International Mathematical Union (IMU). The deadline for receipt of nominations for the 2010 prize is **30 September 2010**.

Please send nominations to director@ictp.it describing the work of the nominee in adequate detail. Two supporting letters should also be arranged. For more information see: http://prizes.ictp.it/prizes/Ramanujan.

The above item is taken from the 42nd issue of the IMU electronic newsletter *IMU Net* (see www.mathunion.org/IMU-Net).

"Are you sure Einstein started this way?"

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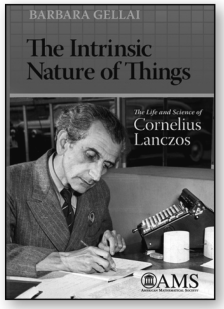
AMERICAN MATHEMATICAL SOCIETY



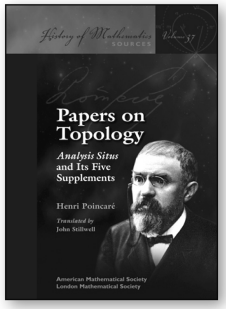
THE INTRINSIC NATURE OF THINGS

The Life and Science of Cornelius Lanczos

Barbara Gellai, *Hungarian Academy of Sciences*

Recounts the extraordinary personal journey and scientific story of Hungarian-born mathematician and physicist Cornelius Lanczos. His life and his mathematical accomplishments are inextricably linked, reflecting the social upheavals and historical events that shaped his odyssey in 20th-century Hungary, Germany, the United States, and Ireland. Lanczos made important contributions to several areas of mathematics and mathematical physics. His first major contribution was an exact solution of the Einstein field equations for gravity (in general relativity). He worked out the Fast Fourier Transform, but since there were no machines on which to run it, this accomplishment would be forgotten for 25 years. Once he had access to computers, Lanczos independently rediscovered what is now known as the singular value decomposition, a fundamental tool in numerical methods.

Oct 2010 168pp 978-0-8218-5166-1 Paperback £23.50



PAPERS ON TOPOLOGY

Analysis Situs and Its Five Supplements

Henri Poincaré
Translated by John Stillwell

The papers in this book chronicle Henri Poincaré's journey in algebraic topology between 1892 and 1904, from his discovery of the fundamental group to his formulation of the Poincaré conjecture. For the first time in English translation, one can follow every step (and occasional stumble) along the way, with the help of translator John Stillwell's introduction and editorial comments. Now that the Poincaré conjecture has finally been proved, by Grigory Perelman, it seems timely to collect the papers that form the background to this famous conjecture. Poincaré's papers are in fact the first draft of algebraic topology, introducing its main subject matter (manifolds) and basic concepts (homotopy and homology). All mathematicians interested in topology and its history will enjoy this book.

History of Mathematics, Vol. 37

Oct 2010 241pp 978-0-8218-5234-7 Paperback £48.50

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

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LMS GRANT SCHEMES FOR CONFERENCES, VISITS AND RESEARCH GROUPS

Next Closing Date for Applications: 15 September 2010

Celebrate New Appointments (Conference Grants)

The Society would like to invite new lecturers in mathematics to consider applying for a conference grant (Scheme 1) to hold an 'inaugural meeting'. It is expected that this would be a one-day meeting consisting of three talks, given by the new lecturer and two other mathematicians in the same research area, preferably from the UK, followed by a small reception and dinner. The purposes would be:

a) to celebrate the new appointment,
b) to strengthen the research network in which the new lecturer naturally sits, and
c) to provide an opportunity for research students and other mathematicians to spend a day focusing on the research area.

A conference grant would cover the costs of the visiting lecturers, any visiting research students, and the dinner, and it is hoped that departments would subsidise the reception.

Grant Schemes

The Society awards grants for the following activities:

- Conferences and postgraduate research conferences held in the UK (Schemes 1 and 8)
- Visitors to the UK (Scheme 2)
- Support of joint research groups (Scheme 3)
- Research in Pairs (formerly called "Collaborative Small Grants" – Scheme 4)
- International short visits with the main focus on Africa (Scheme 5)

Applications received by **15 September 2010** will be considered at a meeting in October. Applications should be submitted well in advance of the date of the event for which funding is requested. Normally grants are not made for events which have already happened or where insufficient time has been allowed for processing of the application.

For full details of these Schemes please see the Society's website (www.lms.ac.uk/grants). Queries regarding applications can be addressed to the Grants Administrators or the Programme Secretary (see below) who will be pleased to discuss proposals informally with potential applicants and give advice on the submission of an application.

- Grants Administrators: Sylvia Daly and Elizabeth Fisher (tel: 020 7291 9971/3, email: grants@lms.ac.uk) who both work Wednesday–Friday.
- Programme Secretary: Stephen Huggett (tel: 01752 586869, email: s.huggett@plymouth.ac.uk)

Information on other grant schemes operated by the Society, for education, the mathematics–computer science interface, and childcare, is also available at www.lms.ac.uk/grants.

POSTGRADUATE RESEARCH CONFERENCES (SCHEME 8)

Success stories

Now in its second year, the Society's scheme for Postgraduate Research Conferences has supported six conferences, which have been organised *by* postgraduate students *for* postgraduate students from across the UK. A typical such conference consists of at least two lectures given by established mathematicians and a series of presentations from postgraduate students. The conferences so far supported by the scheme are:

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- **Leeds MAGIC Conference** in December 2009
- **21st Postgraduate Combinatorial Conference** at QMUL in July 2010
- **12th Postgraduate Group Theory Conference** at St Andrews in June 2010
- **Pure Mathematics Postgraduate Conference** at Newcastle, held in conjunction with the LMS Northern Regional Meeting in April 2010
- **Mathematical Billiards and their Applications** at Bristol in June 2010
- **External and Probabilistic Combinatorics Workshop** organised by Warwick and held in Hampshire during July 2010

In addition, although awarding the grant under the Conferences Grant Scheme, the Society also sponsored the **Young Researchers in Mathematics** meeting, this year held at Cambridge University, which it is hoped will become a regular event.

The Society extends its congratulations to the postgraduate organisers on the success of their conferences and looks forward to developing its support for postgraduate research students in mathematics.

Elizabeth Fisher
Grants & Activities Administrator

VISIT OF D. TALALAEV

Dr Dmitry Talalaev (Moscow State University and ITEP, Moscow) will be visiting the UK from 27 September to 8 October 2010. He will give a series of lectures on his work in quantum integrable systems including:

- Loughborough, 29 September, *Quantum spectral curve method*
- Imperial College, London, 6 October, *Quantum elliptic Calogero–Moser model*
- Manchester, 7 October, *Quantum Gaudin model*

For more information contact Professor Alexander Veselov (A.P.Veselov@lboro.ac.uk). This visit is supported by an LMS Scheme 2 grant.

VISIT OF PROFESSOR C. CALUDE

Professor Cristian Calude (University of Auckland, New Zealand) will be visiting the UK from 31 October to 11 November 2010. Professor Calude works at the interface between mathematics, theoretical computer science and physics, with particular interests in algorithmic information theory, quantum computing, automata theory and the history and philosophy of computing. He will give seminars at:

- University of Oxford, 2 November; contact Bob Coecke (Bob.Coecke@comlab.ox.ac.uk)
- University of Leeds, 3 and 4 November; contact Barry Cooper (pmt6sbc@leeds.ac.uk)
- University of Edinburgh, 9 November; contact Elham Kashefi (ekashefi@inf.ed.ac.uk)

Topics will be chosen from *Is quantum randomness pseudo-randomness?* and *Representability of ε-random reals*. For further details contact Barry Cooper. This visit is supported by an LMS Scheme 2 grant.

VISIT OF PROFESSOR V. PELLER

Professor Vladimir Peller (Michigan State University, USA) will be visiting the UK from 1 to 15 October 2010. Professor Peller works in operator theory; his most recent papers study the behaviour of functions of operators under perturbations. He will give seminars at:

- London, 7 October; contact Yuri Safarov (yuri.safarov@kcl.ac.uk)
- Leeds, 12 October; contact Matthew Daws (matt.daws@cantab.net)
- Newcastle, 14 October; contact Michael Dritschel (m.a.dritschel@ncl.ac.uk)

He will be based in London during the rest of his stay, hosted by Yuri Safarov. The visit is supported by an LMS Scheme 2 grant.

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VISIT OF PROFESSOR D. GUREVICH

Professor Dimitri Gurevich (University of Valenciennes, France) will visit the UK from 11 to 27 October 2010. His interests lie in quantum groups, non-commutative geometry and supermathematics. Professor Gurevich will give talks at:

- Loughborough University, 13 October: contact Alexander Veselov (A.P.Veselov@lboro.ac.uk)
- Leicester University, 14 October; contact Andrey Mudrov (am405@le.ac.uk)
- University of York, 18 October; contact Alexei Daletskii (ad557@york.ac.uk)
- University of Manchester, 21 October; contact Hovhannes Khudaverdian (khudian@manchester.ac.uk)

Professor Gurevich during his visit plans to stay in Leicester (11–14), York (15–18), Manchester (19–25) and London (26–27). For further information contact Hovhannes Khudaverdian (khudian@manchester.ac.uk). This visit is supported by an LMS Scheme 2 grant.

VISIT OF PROFESSOR E. VOLKOV

Professor Evgenii Volkov will be visiting the UK from 28 September to 18 October 2010. He is interested in nonlinear dynamics, especially in the study of nonlinear mechanisms of multirhythmicity in the population of strongly nonlinear oscillators, e.g. coupled genetic oscillators. He will give seminars at:

- University of Exeter, 30 September, in the frame of *Workshop on oscillation dynamics in neural and biochemical systems*; see www.exeter.ac.uk/research/excellence/keythemes/systemsbiology/oscillationdynamicsworkshop/ or contact Peter Ashwin (P.Ashwin@exeter.ac.uk)
- University College London, 4 October; contact Alexey Zaikin (alexey.zaikin@ucl.ac.uk)
- Loughborough University, between 11 and 13 October; contact Natalia Janson (n.b.janson@lboro.ac.uk)
- Bristol University, 15 October; contact Krasimira Tsaneva-Atanasova (K.Tsaneva-Atanasova@bristol.ac.uk)

Professor Volkov will be based at the University College London, Department of Mathematics, hosted by Alexey Zaikin. This visit is supported by an LMS Scheme 2 grant.

VISIT OF PROFESSOR JIE XIONG

Professor Jie Xiong (University of Tennessee, Knoxville) will be visiting Imperial College London from 4 to18 October 2010. Professor Xiong is a leading international expert in the area of Stochastic Analysis. His main contributions lie in the area of measure-valued processes. Most notably, he is part of the team of mathematicians who proved the existence and uniqueness of mutually catalytic processes in the plane. He has also made important contributions to the area of particle representations for stochastic PDEs with applications to Stochastic Filtering. During his visit he will give three talks:

- Tuesday 5 October, Imperial College London; contact Dan Crisan (d.crisan@imperial.ac.uk)
- Monday 11 October, University of Oxford; contact Terry Lyons (tlyons@maths.ox.ac.uk)
- Wednesday 13 October, University of Warwick; contact Xue-Mei Li (xuemei@xuemei.org)

For further details contact Dan Crisan (d.crisan@imperial.ac.uk). The visit is supported in part by an LMS Scheme 2 grant.

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NONLINEAR DIFFUSION

A workshop on *Nonlinear Diffusion: Algorithms, Analysis and Applications* to celebrate Charlie Elliott's 60th Birthday will take place from 6 to 8 June 2011 at the Mathematics Institute, Warwick. Many problems arising in the sciences and engineering give rise to nonlinear diffusion equations. Applications are wide-ranging and include cell biology, pattern formation, materials science and image processing. The purpose of this workshop is to bring together a cross-section of researchers in this broad area with interests focussed on algorithms, analysis and applications. In so-doing the goal is to generate cross-fertilization of ideas between researchers with these different viewpoints. The Invited Speakers are:

- Mark Ainsworth (Strathclyde)
- John Barrett (Imperial)
- Andrea Bertozzi (UCLA)
- James Blowey (Durham)
- Klaus Deckelnick (Magdeburg)
- Gerd Dziuk (Freiburg)
- Don French (Cincinnati)
- Harald Garcke (Regensburg)
- Michael Hinze (Hamburg)
- David Kay (Oxford)
- Ralf Kornhuber (Free University Berlin)
- Stig Larsson (Gothenburg)
- Stephan Luckhaus (Leipzig)
- Barbara Niethammer (Oxford)
- Amy Novick-Cohen (Technion)
- John Ockendon (Oxford)
- Giles Richardson (Southampton)
- José Rodrigues (Lisbon)
- Reiner Schätzle (Tübingen)
- Jürgen Sprekels (WIAS Berlin)
- Björn Stinner (Warwick)
- Songmu Zheng (Fudan University China)

The organisers are: Andrew Stuart (Warwick), Vanessa Styles (Sussex) and Endre Süli (Oxford). Registration is now open at www.warwick.ac.uk/go/nonlineardiffusion. The workshop is supported by an LMS Conference grant.

PATTERNS, NONLINEAR DYNAMICS AND APPLICATIONS

The following *Patterns, Nonlinear Dynamics and Applications* (PANDA) meetings are taking place:

Thursday 16 September 2010 – University of Nottingham

- Philip Moriarty (Nottingham) *Self-organised nanoparticle systems: A panoply of patterns*
- Jitse Niesen (Leeds) *The Evans function and the stability of travelling waves*
- Andrew Stannard (Nottingham) *Intermolecular disorder and rhombus tilings*

Monday 18 October 2010 – University of Leeds

- Gabriel Lord (Heriot-Watt) *Solution of SPDEs with an application from porous media*
- Andrew Stuart (Warwick) *Transition paths in molecules at finite temperature*

There is space for more contributed half-hour research talks at both meetings. Talks are invited on any topic within the PANDA remit, particularly from postdocs and PhD students. A limited amount of funding is available for the reimbursement of travel expenses.

Contact Paul Matthews (Paul.Matthews@nottingham.ac.uk) if you would like to speak at the Nottingham meeting, or Alastair Rucklidge (A.M.Rucklidge@leeds.ac.uk) and Grant Lythe (grant@maths.leeds.ac.uk) for the Leeds meeting. For further details visit the websites at www.maths.nottingham.ac.uk/personal/pcm/panda10.html and www.maths.leeds.ac.uk/~alastair/10_panda

The PANDA network is organised by Rebecca Hoyle (Surrey), Jon Dawes (Bath), Paul Matthews (Nottingham) and Alastair Rucklidge (Leeds), and is supported by an LMS Scheme 3 grant.

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Mathematical Sciences Events
IN BIRMINGHAM

Pi Hunting
Wednesday 15 September 15:00-17:00
Robin Wilson, Tony Mann, Mark McCartney, Noel-Ann Bradshaw
For thousands of years, people have been obsessed with Pi and tried various ingenious methods to calculate its digits. Come and explore the amazing history of Pi.
Location: MB518 (Aston campus) Cost: £5

75 Years of Radar
Friday 17 September 10:00-12:00
Chris Budd, Colin Wright, Cathryn Mitchell
Radar was invented 75 years ago. It made a vital difference to winning the war and continues to keep us safe in the air (as well as catching us if we are speeding). The session will describe the history, current use and future possibilities of radar.
Location: MB155 (Aston campus) Cost: £5

MATHS PRESIDENTIAL LECTURE: How risky is it and how ignorant are we?
Friday 17 September 16:00-17:00
David Spiegelhalter
Uncertainty may be due to unpredictability or ignorance, and often there's a messy mixture of the two. The scientific approach to all uncertainty is through probability theory. Find out how uncertainty can be quantified, whether it's about football results, swine flu or climate change.
Followed by a Reception sponsored by the Royal Statistical Society.
Location: MB550 (Aston campus) Cost: £3

Geometry of the Industrial Revolution
Friday 17 September 18:30-19:30
Chris Sangwin
The Industrial Revolution completely changed the world, but it would not have been possible without Mathematics. Have a closer look at the Mathematics that was vital to the birth of our modern industrial word.
Location: Thinktank (sci museum) Cost: £3

The Maths & Computing Magic Show
Saturday 18 September 16:00-17:30
Peter McOwan
Witness an amazing magic show and sneak behind the scenes to explore the maths and computing powering the tricks. An interactive magic stage show-with plenty of volunteers from the audience. The tricks are performed and then the maths and computing principles behind each is explored.
Location: MB550 Cost: £3

The Serious Side of Scientific Trivia
Sunday 19 September 16:00-17:00
Robert Matthews
Curiosity-driven science and mathematics may not initially be perceived as relevant or useful to society. However this talk will discuss many important examples of curiosity-driven science which have had major impact. In addition, the results of the Great British Knot Experiment will be revealed.
Location: MB518 (Aston campus) Cost: £3

ALL WEEK: Maths on the Street
Sara Santos (Royal Institution) with Matt Parker and other buskers
Throughout the week of the British Science Festival, teams of Maths Buskers will take to the streets of Birmingham to show the general public just how amazing mathematics can be!
Location: Various (details tbc) Cost: Free

These events are part of the British Science Festival in Birmingham from 14-19 September 2010. Details of all events are available online at www.britishsciencefestival.org. Tickets can be booked online or by calling 020 7019 4947.

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LONDON MATHEMATICAL SOCIETY

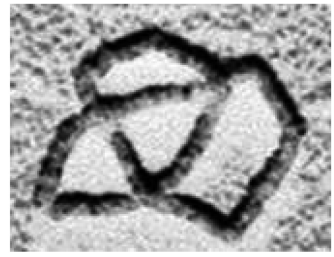
POPULAR LECTURES 2010

(Institute of Education, London – Wednesday 30th June)
University of Birmingham – Wednesday 29th September

Dorothy Buck
Imperial College, London

Modelling the Circle of Life: How Maths Untangles Knotty DNA Questions

Come and see how mathematically understanding knots, like the kind in your shoelaces, has helped us to understand DNA better.



Matt Parker
QMUL

Clutching at Random Straws

Did aliens help prehistoric Britons found the ancient Woolworths civilization? Matt will look at how seemingly incredible results can actually be meaningless random patterns.

BIRMINGHAM: Commences at 6.30 pm, refreshments at 7.30 pm, ends at 9.00. Admission is free, with ticket. **Apply by 24th September.**

Tickets available from Lee-Anne Parker, London Mathematical Society, De Morgan House, 57-58 Russell Square, London, WC1B 4HS (email: leeanne.parker@lms.ac.uk).
A stamped addressed envelope would be appreciated.

The lectures are intended to be suitable for a general audience and no specific mathematical knowledge will be assumed. Although the talks are not primarily intended for professional mathematicians, everyone is welcome and some members may wish to apply for tickets for friends and relatives.

MATHEMATICS OF CRIME

The final intensive course in the London Taught Course Centre (LTCC) summer programme will be the Mathematics of Crime given by Andrea Bertozzi of UCLA. The course will take place from 9 to 10 September 2010 at De Morgan House in London. The course is open to mathematics postgraduates and practitioners nationwide. To register, or for further information, contact Nisha Jones (office@ltcc.ac.uk).

Also, in anticipation of next year's session and subsequent ones, the LTCC would be particularly interested in receiving your suggestions for suitable topics ('hot topics') and lecturers for future intensive courses. Suggestions would be best sent to Nisha Jones(office@ltcc.ac.uk) or Frank Smith (frank@math.ucl.ac.uk).

Funding, available both for organisers and for student participants, can be discussed via the email addresses above. For further information about the LTCC visit the website at www.ltcc.ac.uk.

NEW TRENDS IN SPECTRAL THEORY AND APPLICATIONS

There will be a meeting on *New Trends in Spectral Theory and Applications* at Cardiff University from 18 to 20 December 2010 to mark the coming 80th birthday of Professor D.E. Edmunds and the 70th birthday of Professor W.D. Evans. The following topics will be of particular interest:

- Spectral theory: New results related to properties of eigenvalues and eigenfunctions for non-linear spectral problems, as well as their connections with *s*-numbers and entropy numbers
- Properties of function spaces: New trends in the theory of function spaces and their influence on spectral theory (e.g. grand L^p-spaces, spaces with variable smoothness, etc.)
- Inequalities: Sharp integral inequalities, optimal Sobolev-type inequalities and other inequalities and their use in spectral theory
- Interpolation theory: Applications of interpolation theory to inequalities between new function spaces and the study of decay for entropy numbers and *s*-numbers
- Approximation theory: The behaviour of entropy numbers, approximation numbers, Kolmogorov numbers and other *s*-numbers and problems associated to their relation with eigenvalues of corresponding spectral problems

The invited speakers are:

- A. Balinskii (Cardiff, UK)
- B.M. Brown (Cardiff, UK)
- A. Cianchi (Florence, Italy)
- F. Cobos (Madrid, Spain)
- R.L. Frank (Princeton, USA) (provisional)
- D. Haroske (Jena, Germany)
- J. Lang (Ohio, USA)
- R. Lewis (Birmingham, USA)
- B. Opic (Prague, Czech Republic)
- L. Pick (Prague, Czech Republic)
- V.D. Stepanov (Moscow, Russia)
- C. Tretter (Bern, Switzerland)
- H. Triebel (Jena, Germany)

The meeting is being supported by the London Mathematical Society (LMS), The School of Mathematics, Cardiff University and the Wales Institute of Mathematical and Computational Sciences. There is some support for UK registered research students. For further information, please visit the website www.cs.cf.ac.uk/ddmeeting.

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

PDE MODELS FOR QUANTUM FLUIDS

13–17 December 2010

in association with the Newton Institute programme entitled
Partial Differential Equations in Kinetic Theories
(16 August – 22 December 2010)

Organisers: S. Jin (Wisconsin), P.A. Markowich (Cambridge).

Theme of conference: Quantum fluid modelling has attracted a lot of recent attention, mainly due to the exciting experimental discoveries in Bose–Einstein condensation of the last decade which may have possible applications in quantum computing. Typically, modelling is based on nonlinear Schrödinger equations, like the cubically nonlinear Gross–Pitaevskii equation describing the evolution of Bose–Einstein condensates. Topics of interest include vortex dynamics and vortex pattern, mixing of scales in random phase approximations (related to turbulence theory), lattice condensates and multi-component condensates modelled by coupled systems of nonlinear Schrödinger equations. Kinetic equations, relying mainly on the Wigner transformation, can also be applied to quantum fluid dynamics. Recently hybrid kinetic–quantum mechanical models, coupling the Gross–Pitaevskii equation to the Boltzmann equation, have also become a topic of strong interest. Many deep and open mathematical problems arise in connection with the boson Boltzmann equation in the spatially inhomogeneous case, due to the weak growth of the entropy functional which may even permit the occurrence of singularities in finite time. New efficient numerical methods for quantum Boltzmann equations, and their validity in the quantum hydrodynamic regimes, accurate simulations crossing the regimes from the Gross–Pitaevskii equation to the quantum Boltzmann equations, efficient Bloch decomposition-based numerical methods for quantum dynamics in periodic and random media, are also important research directions to be pursued in this programme.

Further information and application forms are available from the website at: www.newton.ac.uk/programmes/KIT/kitw03.html. Closing date for the receipt of applications is **13 September 2010**.

EMBEDDINGS

10–14 January 2011

in association with the Newton Institute programme entitled
Discrete Analysis
(10 January – 8 July 2011)

Organisers: A. Andoni (Centre for Computational Intractability), T. Austin (UCLA), A. Naor (New York).

Theme of conference: The workshop will be devoted to all aspects of metric embeddings: the general theory of non-linear functional analysis, links between embeddings and geometric group theory and applications of embeddings within theoretical computer science.

Further information and application forms are available from the website at: www.newton.ac.uk/programmes/DAN/danw01.html. Closing date for the receipt of applications is **30 September 2010**.

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

SCHOOL ON MODULI SPACES

5–14 January 2011

in association with the Newton Institute programme entitled
Moduli Spaces
(4 January – 1 July 2011)

Organisers: L. Brambila-Paz (CIMAT, Mexico) (chair), P. Newstead (Liverpool), R. Thomas (Imperial College London), O. García-Prada (CSIC, Madrid).

Theme of conference: The Theory of Moduli Spaces has experienced an extraordinary development in the last decades, finding an increasing number of mathematical connections with other fields of mathematics and physics. This school is an introduction to subjects of current interest related to moduli spaces. The aim of this school is to introduce young mathematicians to the foundations of the theory, some of its major developments and tools used for its study. The school will be directed at students and researchers in mathematics and physics interested in the subject. There will be a mixture of courses and lectures, informal discussions and/or problem sessions.

Further information and application forms are available from the website at: www.newton.ac.uk/programmes/MOS/mosw01.html. Closing date for the receipt of applications is **20 September 2010**.

UNCERTAINTY IN CLIMATE MODELLING: MODELS, METHODS, AND DECISION SUPPORT

6–10 December 2010

in association with the Newton Institute programme entitled
Mathematical and Statistical Approaches to Climate Modelling and Prediction
(11 August – 22 December 2010)

Organisers: R. Chandler (UCL), J.M. Huthnance (National Oceanographic Centre).

Theme of workshop: Climate models and prediction are strongly motivated by the need to support policy. For this we need to examine alternative scenarios and to quantify uncertainty through the different stages in formulating and running predictive models and analyzing their results for projections. Both aspects require a much larger number of model evaluations than is currently possible with state-of-the-art GCMs. The Climate programme addresses approaches to these issues:

- The statistical combination of scenarios, of model ensembles and of uncertain parametrisation values.
- The extent to which we can simplify/reduce climate models' deterministic kernel while introducing stochastic elements that account for missing/unresolved parts (reduced models are less accurate but can be more honest about their inaccuracies).

This final workshop aims to highlight and draw together progress and approaches that have emerged during the programmes, and to articulate challenges for the future.

Further information and application forms are available from the website at: www.newton.ac.uk/programmes/CLP/clpw04.html. Closing date for the receipt of applications is **30 September 2010**.

MATRIX AND OPERATOR PENCILS

The third meeting on *Matrix and Operator Pencils* (MOPNET) will take place at Heriot-Watt University from 20 to 22 September 2010. MOPNET is the EPSRC-funded network on matrix and operator pencils. It brings together engineers, mathematicians and physicists to speak and work on problems of mutual interest, including: general theory of operator pencils; theory and numerics for structured polynomial problems; numerical methods for spectra of analytic pencil problems; pseudospectra of analytic functions; linear algebra of structured parameter-dependent linear systems; PDEs on domains with special structure. Speakers include:

- Dario Bini (Pisa)
- David Burton (Lancaster)
- Younes Chahlaoui (Manchester)
- Bernard Helffer (Paris Sud)
- Ilya Kamotski (Bath)
- Daniel Kressner (ETH Zurich)
- Matthias Langer (Strathclyde)
- Michael Levitin (Reading)
- Nancy Nichols (Reading)
- Alastair Spence (Bath)

Financial support is available to UK-based academics. A limited amount of funding is available to support PhD students. Enquiries to the meeting organizer Lyonell Boulton (L.Boulton@ma.hw.ac.uk) or to the network coordinators Marco Marletta (MarlettaM@cf.ac.uk) and Michael Levitin (M.Levitin@reading.ac.uk) or visit the website at http://mopnet.cf.ac.uk/meeting3.html. This meeting is also sponsored by the Science and Innovation initiative 'Numerical Analysis and Intelligent Software'.

ALGORITHMS AND COMPLEXITY IN DURHAM

The Fourth ACiD (*Algorithms and Complexity in Durham*) Workshop will take place at Durham University from Monday 20 September to Wednesday 22 September 2010. The workshop is informal and will focus on research at the interface of Mathematics and Theoretical Computer Science. The invited speakers are:

- Amin Coja-Oghlan (University of Warwick)
- Bill Jackson (Queen Mary University of London)
- Dieter Kratsch (University of Metz)
- Sarah Rees (University of Newcastle)
- Rahul Santhanam (University of Edinburgh)

We also invite short contributed talks from all participants. Instructions for submitting an abstract can be found on the workshop webpage. After submission you should be informed within five working days if your abstract has been accepted. The deadline for submitting an abstract is **immediately**. Selected participants will be invited to submit papers based on their talks for publication in a Special Issue of the *Journal of Discrete Algorithms*.

The registration conference fee is £250. This includes two nights accommodation in a single en-suite room and all meals and refreshments. The workshop will be held in the Calman Learning Centre, Durham University with accommodation and meals in Grey College. The organisers are able to reduce the fee to £50 for a limited number of UK-based postgraduate students. There are also reduced fees for those who wish to attend for only part of the conference or without booking accommodation. Full details are available from the workshop webpage at www.dur.ac.uk/acid.2010. The workshop is supported by an LMS Conference grant.

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www.bristol.ac.uk

Chairs

Professorial Grade Salary

The University of Bristol is seeking applications for the following three newly established positions:

- Professor/Reader in Algebraic/Arithmetic Geometry (Ref: 15489)
- Professor/Reader in Combinatorics (Ref: 15491)
- Professor/Reader in Probability Theory (Ref: 15493)

These positions form part of the University's strategic expansion in research areas that complement existing strengths in Pure Mathematics and Statistics at Bristol. The successful candidates will be expected to build up and lead a research group of the highest international level.

The School of Mathematics is one of the leading centres for research and teaching in mathematics in the UK. There are groups working in Applied Mathematics, Pure Mathematics and Statistics. In the 2008 Research Assessment Exercise (RAE), Applied Mathematics ranked third, Pure Mathematics ranked joint fifth and Statistics ranked joint fourth in terms of grade-point average. Furthermore, the School has close links with the Heilbronn Institute for Mathematical Research, which is based in Bristol and runs a co-ordinated series of research programmes, conferences and workshops.
(See http://www.maths.bris.ac.uk/research/heilbronn_institute).

Women are currently under-represented in the School of Mathematics, therefore we particularly welcome applications from women for these posts. The University has numerous family friendly policies which can be found on the Positive Working Environment website http://www.bris.ac.uk/pwe

To discuss any aspect of the posts, please contact Professor Guy Nason, Head of the School of Mathematics and Academic Secretary to the Appointment Committee.
Telephone: +44 (0)117 928 8633 E-mail address: hod-maths@bristol.ac.uk

Alternatively, please feel free to contact any of the people listed below for informal discussions with respect to the posts: Prof. M van den Berg, Head of the Pure Mathematics Group +44 (0)117 331 1666, m.vandenberg@bristol.ac.uk Prof. C Andrieu, Head of the Statistics Group +44 (0)117 928 9134, c.andrieu@bristol.ac.uk Prof. T Wooley, FRS, Associate Director of the Heilbronn Institute +44 (0)117 331 5240, trevor.wooley@bristol.ac.uk

Further details and an application form can be found at www.bristol.ac.uk/jobs Alternatively you can telephone +44 (0)117 954 6947 or e-mail recruitment@bristol.ac.uk quoting the relevant reference number.

In order to receive full attention, applications should be received by 9.00am on Friday 1st October 2010.

EXCELLENCE THROUGH DIVERSITY

University of BRISTOL

SCOTTISH COMPUTATIONAL MATHEMATICS SYMPOSIUM

The 19th *Scottish Computational Mathematics Symposium* (SCMS) will take place on Monday 6 September 2010 at Heriot-Watt University, Edinburgh. The speakers will include:

- Penny Davies (University of Strathclyde)
- Bosco García-Archilla (University of Seville)
- Des Higham (University of Strathclyde)
- Jesus M. Sanz-Serna (University of Valladolid).
- David Silvester (University of Manchester)
- Andrew Stuart (University of Warwick)
- Andy Wathen (University of Oxford)

The aim of the SCMS is to bring together mathematicians and others who develop and use computer algorithms to solve mathematical problems. This meeting is particularly focused on differential equations – ordinary, partial and stochastic. This meeting is also designed to celebrate the career of David Griffiths (University of Dundee) as he reaches his 65th birthday.

For further information visit the website at www.ma.hw.ac.uk/scms. The organisers are grateful to the London Mathematical Society and the Edinburgh Mathematical Society for funding this meeting.

ANGLO-BELGIAN WORKSHOP IN MODEL THEORY AND APPLICATIONS

The second *Anglo-Belgian Workshop in Model Theory and Applications* will take place at Queen Mary University of London from 13 to 14 September 2010. This meeting is a follow-up to the highly successful workshop that happened in Mons in December 2009. The scientific interests of young researchers in Belgium and the UK complement each other well to cover a wide spectrum of topics in Model Theory and its applications. The organisers wish to showcase this variety in the programme of the meeting and to facilitate the exchange of ideas and the start of new collaborations between the two countries. The invited speakers are:

- Martin Bays (Oxford, UK)
- Raf Cluckers (KU Leuven, Belgium and Lille 1, France)
- Jeroen Demeyer (Ghent, Belgium)
- Misha Gavrilovich (Kurt Gödel RC, Vienna)
- Abderezak Ould Houcine (Mons, Belgium)
- Gareth Jones (Manchester, UK)
- Françoise Point (Mons, Belgium and CNRS-Paris 7, France)
- Cédric Rivière (Mons, Belgium)
- Mark Ryten (London, UK)
- Pietro Dello Stritto (Mons, Belgium)
- Giuseppina Terzo (Napoli 2, Italy)

The conference is supported by an LMS Conference grant and a grant from the British Council and WBI/FNRS Partnership Programme in Science. For further information visit the conference website at www.maths.qmul.ac.uk/abwtm2.

LMS *NEWSLETTER* ONLINE

Readers are reminded that they may choose to read the LMS *Newsletter* on screen. A file of the current *Newsletter* can be accessed at www.lms.ac.uk/newsletter/current_issue.pdf at any time. Remember to add it to your favourites. The current *Newsletter* and the archive of past *Newsletters* are also available in HTML (web-browser) format via www.lms.ac.uk/newsletter/. The HTML version is conveniently structured according to news categories, with indexes listing the individual articles, making it very easy to navigate to items of particular interest. Commercial adverts and the monthly cartoon are not included in the HTML version.

Anyone who wishes to stop receiving a paper copy can choose to receive instead an email alert at the beginning of each publication month, containing precise links to the current PDF and HTML versions. To do so, please write to membership@lms.ac.uk.

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MATHEMATICAL MODELLING IN BIOLOGY

A workshop on *Mathematical Modelling in Biology* will take place on 14 September 2010 at the Department of Mathematics and Statistics, University of Strathclyde. This one-day workshop is mainly to bring UK researchers in the area of Mathematical Modelling in Biology and their research students together to promote, encourage, and influence more cooperation, and to bring together various disciplines e.g. biology, mathematics, engineering, computer science. The Invited Speakers are:

- J.S. Heslop-Harrison (University of Leicester)
- J. Kim (University of Glasgow)
- Y. Mao (Cancer Research Center London)
- P. Swain (University of Edinburgh)
- A. Tournier (Cancer Research Center London)
- H. Yue (University of Strathclyde)
- Y. Zhao (University of Glasgow)

There will be a poster section given by research students. Some funding is available for students. For further information visit the website at http://tinyurl.com/395o6bz or email Professor X. Mao (x.mao@strath.ac.uk). The workshop is supported by an LMS Conference grant.

HARMONIC ANALYSIS AND PDEs

This workshop is a two-day meeting of the LMS Harmonic Analysis and PDE Network, and is open to all who are interested. The workshop will take place from 16 to 17 September 2010 at the Instituto de Ciencias Matemáticas (ICMAT), which is located in the campus of the Universidad Autónoma de Madrid (UAM).

The speakers are:

- Neal Bez (Birmingham, UK)
- Tony Carbery (Edinburgh, UK)
- Piero D'Ancona (Rome, Italy)
- Thomas Duyckaerts (Paris, France)
- Malabika Pramanik (Vancouver, Canada)
- Xavi Tolsa (Barcelona, Spain)

There will be an informal dinner in the city on the evening of 17 September at which all participants will be very welcome. Email Keith Rogers (keith.rogers@icmat.es) if you wish to attend. For further information visit the website at http://tinyurl.com/3974dcs or email Keith Rogers (keith.rogers@icmat.es). The meeting is supported by an LMS Scheme 3 grant and the Ministerio de Ciencia e Innovación.

STATISTICAL PROPERTIES OF RARE EVENTS

A two-day meeting on the statistical properties of rare events will be held at the Mathematics Research Institute, Exeter, from the morning of Monday 27 September to the afternoon of Tuesday 28 September 2010. The meeting is to bring together researchers in dynamical systems, ergodic theory and climate research, with a focus on understanding recurrence statistics and extreme events. Confirmed speakers include:

- Henk Bruin (Surrey)
- Chris Ferro (Exeter)
- Matt Nicol (Houston)
- Dalia Terhesiu (Surrey)
- Sandro Vaienti (Marseille)

All are welcome. Further details can be obtained from Mark Holland (m.p.holland@exeter.ac.uk) and the website at http://empslocal.ex.ac.uk/people/staff/mph204/rare_events.html. The meeting is supported by an LMS Conference grant.

RECORDS OF PROCEEDINGS AT MEETINGS

ORDINARY MEETING

held on *Friday 2 July 2010* at University College London. About 55 members and visitors were present for all or part of the meeting. The meeting began at 3.30 pm, with the President, Professor A.J. MACINTYRE FRS, in the Chair.

Eleven people were elected to Ordinary Membership: A.A. Jarai, A. Kar, T. Kuna, K. Leschke, A. Pillay, A. Pratoussevitch, T. Prellberg, S. Schleimer, I. Short, L.J. Silvers, A.P. Watson; seven were elected to Associate Membership: W.H. Aziz, M.J. Baker, A. Jacquier, J. Martinez-Garcia, J.W. Mason, L.A. Menguturk, I.M. Tawfik; and one was elected to Reciprocity Membership: Y. Ali (American Mathematical Society).

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

On a recommendation from Council it was agreed to elect Professor R.A. Bailey and Professor P.T. Saunders as scrutineers in the forthcoming Council elections.

The President, on Council's behalf, proposed that Professor Yvonne Choquet-Bruhat of Université Pierre et Marie Curie and Professor Terence Tao of the UCLA be elected to Honorary Membership of the Society. The President read a short version of the citations, to be published in full in the *Bulletin*.

The President then announced the awards of the prizes for 2010:

De Morgan Medal	Professor Keith William (Bill) Morton (University of Oxford)
Fröhlich Prize	Professor Jonathan Keating, FRS (University of Bristol)
Senior Berwick Prize	Professor Dusa McDuff, FRS (Barnard College, New York)
Whitehead Prizes	Dr Harald Helfgott (University of Bristol)
	Professor Jens Marklof (University of Bristol)
	Dr Lasse Rempe (University of Liverpool)
	Dr Françoise Tisseur (University of Manchester)

The President read short versions of the citations, to be published in full in the *Bulletin*.

The President announced the President-Designate to be Professor Graeme Segal, FRS.

The President introduced a lecture given by Professor Raphaël Rouquier on *Dunkl Operators and Cherednik Algebras*.

Following a break for tea, the President introduced a lecture by Professor Hiraku Nakajima, the Hardy Lecturer, on *Instanton Counting and Donaldson Invariants*.

At the end of the meeting, the President thanked the speakers. The President also thanked the organiser of the Graduate Student Meeting (which was held at University College London that morning), Dr Joe Chuang, and the speakers, Professor Balász Szendröi, Dr Kevin McGerty and the LMS Publisher Dr Susan Hezlet.

After the meeting, a reception was held at De Morgan House, followed by a dinner at the British Museum.

RECORDS OF PROCEEDINGS AT MEETINGS

REGIONAL ORDINARY MEETING

held on *21 June 2010* at Cardiff University. Around 35 members and visitors were present for all or part of the meeting.

The meeting began at 2 pm, with the President, Professor A.J. MACINTYRE, FRS, in the Chair.

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

Professor D.E. EVANS introduced a lecture given by Professor Werner Nahm on *The Present Status of Quantum Field Theory*.

After tea, Professor Evans introduced a lecture given by Professor Constantin Teleman on *Two-Dimensional Topological Quantum Field Theories and Gauge*.

The President expressed the thanks of the Society to the local organisers and the speakers for putting on such an interesting meeting.

After the meeting dinner was held at the Bayside Brassiere.

HOW TO TALK MATHS IN PUBLIC

How to Talk Maths in Public: an IMA Conference on Public Engagement was held at the University of Manchester from 8 to 9 June 2010. This event was an opportunity for those involved in maths engagement or interested in maths engagement to meet and discuss ideas with the experts. The conference was supported by the University of Manchester and the Engineering and Physical Sciences Research Council (EPSRC) through their Partnerships for Public Engagement scheme. It was organised by a broad group of mathematics communication and understanding experts headed by Steve Humble (aka Dr Maths, NCETM), David Abrahams (Manchester) and Chris Budd (Bath). Over 90 people attended this first conference of what is hoped to be a regular series on maths–public engagement.

The conference included talks from Ian Stewart, Marcus du Sautoy, David Spiegelhalter, Chris Budd, Rob Eastaway and Simon Singh about their public engagement experiences, what to do and mistakes to avoid repeating. There were also small workshops that allowed delegates to discuss a specific area of maths communication with mathematicians experienced in that area. The after dinner speaker, stand-up comic Matt Parker entertained us with a lively, amusing and mathematical show, including sending a standing wave from one end of the dining hall to the other.

Most of the second day was given to *e^x factor* activities. Delegates were put into small groups with a mentor and asked to produce a piece of maths communication for radio, TV, public lecture or written publication. My group wrote a short article for *Plus* magazine, entitled *Is the Magic Over?* which recognises the gap Martin Gardner's

passing has left in the world of Recreational Mathematics. On the advice of our mentors we took the opportunity to interview some prominent mathematicians about how Martin Gardner influenced them. The article is available via http://plus.maths.org/.

The groups then presented their outputs, which included energetic talks for children, maths busking, short radio and TV items and outlines of articles and press releases. These were assessed by four judges who presented 1st, 2nd and 3rd prizes – with the winners each receiving a bottle of wine! The winning group were a panel of three mathematicians being interviewed by their mentor who asked some very tough (and repetitive) questions, asking them in various ways to justify the existence of mathematics and mathematicians! They won first prize because in a very short film they managed to get over the message that mathematics is beautiful, enjoyable and useful, and communicating that to the public is why we were all there.

Professor Ian Stewart presents the winning e^x *factor* group with their certificates: (left to right) Louise Walker, University of Manchester; Julia Collins, University of Edinburgh; Hazel Kendrick, IMA.

Rebecca Waters
Editorial Officer *Mathematics Today*
Institute of Mathematics and its Applications

PARLIAMENTARY LINKS DAY

On 22 June 2010, Duncan Turton and I (part of the LMS *Council & Committees Group*) attended the Royal Society of Chemistry's (RSC) annual Parliamentary Links Day at Portcullis House for a series of talks which promoted the links between the sciences and politics. This annual event is run by the RSC as part of its wider Parliamentary Links Scheme, which aims to connect MPs from the three major parties with RSC contacts who provide them with briefings about the chemical sciences which may be relevant to current debates and legislation.

At the Parliamentary Links Day itself, short speeches were given by several MPs from the House of Commons, including:

- David Willetts MP (Minister of State for Universities and Science)
- Rt Hon Ed Miliband MP (Shadow Secretary of State for Energy and Climate Change)
- Professor Adrian Smith (Director General of the Science and Research Group; Department of Business, Innovation and Skills)
- Dr Julian Huppert MP
- Mr Mark Lancaster TD MP
- Malcolm Wicks MP (former Minister of Science)

We heard presentations that highlighted the important contributions made by the scientific community to the future of society from representatives of various scientific societies:

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- The Royal Society
- The Royal Academy of Engineering
- The Royal Society of Chemistry
- The Institute of Physics
- The Society of Biology
- The Geological Society
- Royal Astronomical Society
- Institution of Chemical Engineers
- Parliamentary Office of Science and Technology
- Parliamentary and Scientific Committee

Issues raised by these societies included concerns about the current lack of physics teachers (Institute of Physics) and the need for investment within engineering in the UK both to retain ideas and innovations and to attract overseas designers (The Royal Academy of Engineering). The Royal Astronomical Society highlighted how advances in one scientific area can be used to benefit the wider society, for example, space technology could also be used to detect and diagnose TB, while The Geological Society warned that the undesired consequences of increased CO_2 emissions are clearly shown in the earth's geological record.

Climate change was a chief concern of the MPs who spoke, and Ed Miliband recognised the importance of encouraging scientists (and not just politicians) to speak with greater knowledge on these important issues. As part of this encouragement, David Willetts mentioned his aim to work closer with the Department of Justice to review libel cases so that scientists would feel able to speak out without fear of possible allegations of libel.

The enthusiasm for the continued and further collaboration between the sciences and politics was present throughout the day. In this spirit, the link established between the RSC and the LMS through Anne Bennett, *Group Head for Council & Committees*, has already grown as Fiona Nixon, *Executive Secretary*, will be working with the Parliamentary Affairs Committee to ensure that mathematics will be represented more fully at the next Parliamentary Links Day.

Elizabeth Fisher
Grants & Activities Administrator

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Faculty Position in Geometry
at the Ecole Polytechnique Fédérale de Lausanne (EPFL)

The School of Basic Sciences at EPFL invites applications for a position of professor of mathematics at the associate or full professor level in the field of geometry. The field should be interpreted broadly and may comprise, for example, differential, algebraic or arithmetic geometry, although certainly not limited to these domains.

We are seeking candidates with an outstanding research record and a strong commitment to excellence in teaching at both the undergraduate and graduate levels. Substantial start-up resources and research infrastructure will be available.

The School of Basic Sciences aims for a strong presence of women amongst its faculty, and female candidates are strongly encouraged to apply. Applications including letter of motivation, curriculum vitae, publication list, concise statement of research and teaching interests as well as the names and addresses (including email) of at least five references should be submitted in PDF format via the website **http://sbpositions.epfl.ch/applications/**. The evaluation process will start on December 15, 2010, but applications arriving after that date may also be considered.

For additional information, please contact **Professor Philippe Michel**, Chair, Mathematics Search Committee.

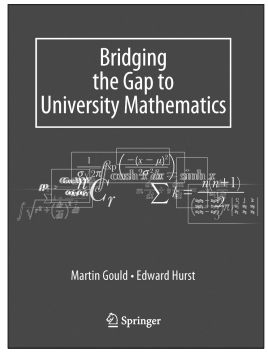
Email: philippe.michel@epfl.ch,

Please specify the tag «geometry» in the subject field.

REVIEWS

Bridging the Gap to University Mathematics by Martin Gould and Edward Hurst, Springer, 2009, 362 pp, £15.99, ISBN 978-1-84800-289-0.

We are all aware of the gulf between university mathematics and the mathematics studied at school or college. Students are coming to university from an increasingly wide variety of backgrounds having studied an equally wide variety of mathematics. Even within A-levels, Scottish Highers and the International Baccalaureate there are variations of syllabus. Universities do their best to plug the gaps, but understandably some students feel concerned that they are expected to know mathematics that they have not been taught, whilst others have just forgotten it.



Bridging the Gap to University Mathematics is intended to do exactly what the title suggests. Gould and Hurst were, at the time of writing, both students and one gets the feeling that their desire is to tell prospective students what they themselves wish someone had told them before they embarked on their own mathematical journey at university.

The book covers a broad range of topics from inequalities and complex numbers through mechanics, proof and probability distributions to hyperbolic functions and series. Well written and easy to read, it divides the material into twenty chapters, which are broken down into manageable chunks. Every chapter begins with ten 'test yourself' questions designed to help the student discover whether they really do understand a particular topic. As each one is written as a single entity, not depending on preceding content, it is a book that students can dip in and out of rather than read from cover to cover.

It is pleasantly laid out and contains numerous worked examples which clearly illustrate the more complicated concepts. Each subsection is followed by an exercise for the students to work through to test their understanding. All answers, to these and the starter questions, are provided at the back of the book enabling students to monitor their progress. Concluding each chapter is a very helpful section entitled 'where now?' which explains how this area of mathematics might come into their university course and where it could lead to. Readers are helpfully referred to other texts for further, more in-depth, material or interest. Lastly, an appendix provides useful formulae and extension questions, this time with worked solutions.

The book is written in a fresh, conversational style that is neither patronising nor written in a format intended to solely appeal to the young. It is a book that one could quite easily use as the basis of an introductory or foundation course or to stretch the brightest sixth-formers with something interesting, possibly after they have taken their exams.

My only quibble is that its usefulness might depend on which mathematics degree and university the student has chosen because different courses will require different prior knowledge. Some universities might be wary of recommending this before term starts as they would not want to imply that all of this material needs to be known before the course commences. Others might require more. Although the authors do make this point in the preface, I am concerned that some students might be worried and think that if they do not know all this before they start, they cannot possibly succeed on a mathematics degree.

However, that aside, I think this is a very useful book for prospective and first-year mathematics students to read and refer to. I will certainly be recommending it to our new first-year students once they have started.

Noel-Ann Bradshaw
University of Greenwich

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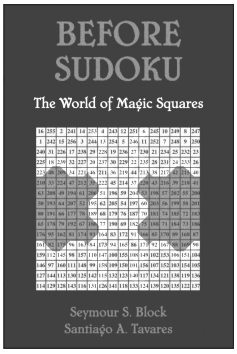
Before Sudoku: The World of Magic Squares by Seymour S. Block and Santiago A. Tavares, Oxford University Press, 2009, £9.99, ISBN-13: 978-0-19-536790-4.

A few years ago, a supplement on Switzerland in a national newspaper included, in an item *Ten things you didn't know about Switzerland*, the information that Euler invented Sudoku. In fact he didn't, but he took a crucial step on the road from magic squares (which have fascinated humankind for thousands of years) to Sudoku.

A magic square is an $n \times n$ array filled with the integers $1, 2, \ldots, n^2$ in such a way that all rows, columns and diagonals sum to $n(n^2+1)/2$. Euler added a new construction (based on his invention, Graeco-Latin or Euler squares) to the very substantial literature on magic squares. These had been considered by Chinese, Arab and Byzantine mathematicians, and many different constructions were already known. Part of their importance came from their use as talismans, which also may have given rise to the name. A celebrated example is the magic square in Dürer's engraving *Melencolia I*, which was also studied much later by Benjamin Franklin.



Latin squares became an important research topic, especially in statistics where they are used in experimental design (beginning just a few years after Euler, with a study of feeding roots to sheep by Cretté de Palluel in 1788), while magic squares became mostly the preserve of recreational mathematicians. Although all the ingredients for Sudoku had been developed by statisticians studying Latin squares, it was a retired American architect, Howard Garns, who invented the puzzle Number Place in 1987. The puzzle was introduced to Japan by Maki Kaji, and re-introduced to the West by New Zealander Wayne Gould, when it became a world-wide craze.

The book under review traces some of this history (omitting most of the work by statisticians), and then turns to magic squares and their variants. The variants are of several types:

- We may impose stronger conditions: for example, in a 4 × 4 square, we might also require the entries in the 2 × 2 subsquares to sum to the magic constant 34.
- We may replace the rows, columns and diagonals of a square by other sets, usually defined geometrically by lines or circles in other geometric figures.
- Instead of, or as well as, constant sums, we may ask for constant products, or sums of squares or higher powers.
- Some magic squares can be transformed into others by reflection or other manipulation.

Many examples are given, but the book gives little insight into how the constructions are done. The authors' attitude is typified by a statement quoted approvingly from the architect Claude Bragdon: "Ours is the age of mathematics, it is the magician's wand without which our workers of magic, be they bankers, engineers, physicists, inventors could not perform their tricks."

Uses of magic squares in the arts (including the music of Peter Maxwell Davies and others) and the sciences are described.

The book is marred by several careless errors: the distance to the edge of the universe is stated to be 10^{88} miles, with an attribution to Martin Gardner; on page 50, a magic hexagram involving fractions, taken from a grade-five exercise booklet, is given – the authors do all the sums, but get one wrong; R.A. Fisher was at Rothamsted Experimental Station, not the University of Cambridge, when he pioneered the use of Latin squares in agricultural experiments.

The authors explain that the book is for people who enjoy Sudoku puzzles. Sad to say, it is not for mathematicians, nor for historians of mathematics.

Peter J. Cameron
Queen Mary, University of London

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Dara O'Briain's University of Practical Mathematics

I was fortunate enough to witness the recording of the pilot episode for a new BBC 4 TV show which combines the comedy talents of Dara O'Briain (*Mock the Week*) and Charlie Higson (*The Fast Show*) with the mathematical know-how of Professor Paul Glendinning (University of Manchester).

Dara welcomed the studio audience to the recording with a promise that the show would be 'unashamedly nerdy', and he was true to his word. We were also warned that the format was based on a late-night Japanese game show, which explained a lot.

The show sees three groups of people tackle a series of mathematics problems. Dara himself and a pair of mathematics undergraduates make their attempts with a pen and paper, while a troupe of self-styled 'idiots' are tasked with finding an empirical solution. Everyone's attempts are overseen by Paul Glendinning, the resident mathematician, who provides a commentary on their approaches and suitable nudges in the right direction.

The teams were faced with the classic 'sports-car-or-goat' Monty Hall Problem, an optimal stopping question formulated in terms of speed dating, and a circle-packing problem involving tins of tomato puree. Unlike a conventional brainteaser show, we actually witness the participants puzzling over their solutions, reaching dead ends and seeking help from Paul in the manner of many an undergraduate mathematics tutorial. In the case of those of us present at the recording this all takes place in real time, giving a reminder of what it's like to learn mathematics in a didactic way (albeit by proxy); quite what will remain after the editing process remains to be seen, though.

The team of everymen attempt to provide some comic relief to the proceedings while Dara recalls how to rearrange logarithms, but their brute force methods – literally in the case of the tomato puree tins – also highlight the elegance of a purely mathematical approach. Indeed, the words 'elegance' and 'beauty' are used throughout by Charlie Higson, despite the inherent difficulty of following a hastily scrawled solution of a bald Irish comedian.

As Dara put it, 'if I didn't do this show then it wouldn't get done' – this is certainly true, as the mass-market appeal of such a show is dubious. While a diagram-based answer to the Monty Hall problem is reasonably easy to follow, the steps involved in reaching a solution for the optimal stopping problem are probably too detailed to communicate through this medium. That said, the power of mathematics certainly came across well and could inspire some 'I wish I could do that' moments. Paul's approach to guiding the undergraduates and Dara was fitting, and sent the message that with a bit of encouragement and Socratic dialogue even the most difficult puzzles can be tackled with mathematics.

Martin Smith
ACME

Rites of Love and Math by Reine Graves and Edward Frenkel

Rites of Love and Math is a 26-minute colour film which is a homage to the 26-minute 1966 black and white film *Rites of Love and Death*. The original film was directed by Yukio Mishima, who also starred as a young Japanese army officer. The officer would rather die than execute his friends, who were involved in the failed *coup d'état* of 1936. He spends his last night making love to his wife, after which he commits harakiri. The original film is of great intensity, with the stylized Noh theatricality heightened by the soundtrack of Tristan and Isolde. In addition, we know that in 1970 Mishima himself participated in a failed coup d'etat and committed harakiri.

Edward Frenkel, the co-director of *Rites of Love and Math,* is a distinguished mathematical physicist at Berkeley. In the film he plays the 'mathematician' who discovers 'after many years of hard work' a 'Formula of Love'

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so powerful that it can be used for both good and evil.The formula is credibly played by equation (5.7) in Frenkel, Losev and Nekrasov [**2**]. The `Forces of Evil' want to steal the formula. The mathematician spends his last night with his lover (played by Kayshonne Insixieng May) preserving the formula for posterity by tattooing it on her body, and then stabbing himself with the tattooing pen. While the story is ludicrous, the acting is carried off with great conviction, and the bodies are indeed beautiful. (I eschew the obvious pun about the mathematical physique.) The two films should really be seen together, as the modern version is a pastiche of the original. For all its goriness, the original made a far greater impression on me.

Mathematicians feature ever more frequently in films and on TV – the website Movies in Mathematics [**3**] offers a good selection. By and large, male mathematicians are portrayed as crazies who are smart and lovable, but badly dressed. Likewise for female mathematicians, although they tend to be better dressed. This said, in the film under review, the actors are either very well dressed, or not dressed at all.

My two personal favourite films involving mathematicians are *Merry Andrew* (1958) with Danny Kaye as a mathematics teacher singing "The square on the hypotenuse of a right triangle is the sum of the squares of the two adjacent sides", and the witty short *Measuring the World* [**1**] promoting the English translation of Daniel Kehlmann's wonderful German novel about Gauss and Humboldt. Gauss is depicted on his wedding night, in the throes of mathematical passion!

Andrew Ranicki
University of Edinburgh

References

1. O. Cheetham, *Measuring the World*, www.youtube.com/watch?v=sC6P_5A40IA.
2. E. Frenkel, A.Losev and N. Nekrasov, 'Instantons beyond topological theory I', http://arxiv.org/abs/hep-th/0610149.
3. O. Knill, *Movies in Mathematics* website, www.math.harvard.edu/~knill/mathmovies/

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).

SEPTEMBER 2010

1-3 Models in Population Dynamics and Ecology 2010 Workshop and Conference, Leicester (394)
2-4 British Logic Colloquium, Birmingham (394)
2-5 William Rowan Hamilton Geometry and Topology Workshop, Dublin (393)
6 LMS Midlands Regional Meeting, Nottingham (395)
6 Function Theory Meeting, University College London (394)
6 Scottish Computational Mathematics Symposium, Heriot-Watt University (395)
6-7 2020 Vision: Maths and Stats in Higher Education Over the Next 10 Years, Birmingham (394)
6-8 British Topology Meeting, Oxford (391)
6-8 European Symposium on Algorithms, Liverpool (394)
6-10 Multivariate Approximation and Interpolation with Applications ICMS Workshop, Edinburgh (386)
6-10 Fluid-Kinetic Modelling in Biology, Physics and Engineering Workshop, INI, Cambridge (394)
7-9 Function Theory and Dynamical Systems Workshop, University College London (394)
7-10 C*-algebras Workshop, Nottingham (395)
9-10 Mathematics of Crime Course, London (395)
12-17 Highly Oscillatory Problems: From Theory to Applications, INI, Cambridge (389)

13-14 Anglo-Belgian Workshop in Model Theory and Applications, Queen Mary University of London (395)
14 Mathematical Modelling in Biology Workshop, University of Strathclyde (395)
14-19 British Science Festival, Birmingham (395)
16 Patterns, Nonlinear Dynamics and Applications Meeting, Nottingham (395)
16-17 Heilbronn Conference, Bristol (393)
16-17 Induction Course for New Lecturers, Birmingham (394)
16-17 Harmonic Analysis and PDEs Workshop, UAM, Madrid, Spain (395)
17 Geometry & Algebra Spitalfields Day, Royal Society of Edinburgh (395)
20-22 Matrix and Operator Pencils Workshop, Heriot-Watt University (395)
20-22 Algorithms and Complexity in Durham Workshop, Durham (395)
20-24 Dissipative PDEs in Bounded and Unbounded Domains and Related Attractors, ICMS Workshop, Edinburgh (394)
27-28 Statistical Properties of Rare Events, Exeter (395)
29 LMS Popular Lectures, Birmingham (395)

OCTOBER 2010

11-15 The Higher-Genus Sigma Function and Applications, ICMS Workshop, Edinburgh (394)
18 Patterns, Nonlinear Dynamics and Applications Meeting, Leeds (395)

NOVEMBER 2010

19 LMS Annual General Meeting, Naylor Lecture, London

DECEMBER 2010

6-10 Birational Geometry, ICMS Workshop, Edinburgh (394)
6-10 Uncertainty in Climate Modelling, INI, Cambridge (395)
6-10 Australian Statistical Conference 2010, Fremantle, Australia (383)
13-17 PDE Models for Quantum Fluids, INI, Cambridge (395)
18-20 New Trends in Spectral Theory and Applications Workshop, Cardiff (395)

JANUARY 2011

5-14 School on Moduli Spaces, INI, Cambridge (395)
10-14 Embeddings, INI, Cambridge (395)
10-14 Torsors: Theory and Application, ICMS Workshop, Edinburgh (394)

APRIL 2011

4-8 Computational Challenges in Partial Differential Equations Meeting, Swansea (392)
15-19 The Kervaire Invariant and Stable Homotopy Theory, ICMS Workshop, Edinburgh (394)

JUNE 2011

6-8 Nonlinear Diffusion: Algorithms, Analysis and Applications Workshop, Warwick (395)
6-10 Oscillatory Integrals in Harmonic Analysis, ICMS Workshop, Edinburgh (394)
26-30 Signal Processing with Adaptive Sparse Structured Representations ICMS Workshop, Edinburgh (394)
26-30 New Developments in Non-Commutative Algebra and Applications ICMS Workshop, Skye (394)

JULY 2011

1 LMS Meeting, London
4-8 Set Theory ICMS–ESF Meeting, Edinburgh (394)
18-22 ICIAM 2011, Vancouver, Canada (388)
19 LMS Northern Regional Meeting, Leeds
19-22 Homogeneous Structures Workshop, Leeds

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LMS member 1879–1883

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