THE LONDON MATHEMATICAL SOCIETY



NEWSLETTER

No. 340 September 2005

Forthcoming Society Meetings

2005

Monday 5 September Bristol South West & South Wales Regional Meeting T. Tao V. Bergelson [page 3]

Friday 7 October

London Algorithms Meeting Martin Dyer Mark Jerrum [page 15]

Friday 18 November

London Annual General Meeting B. Totaro F.C. Kirwan

2006

Friday 10 February London G. Segal U. Tillmann (Mary Cartwright Lecture)

COUNCIL DIARY 17 June 2005

As usual, the agenda of June Council was long and wideranging. Just a few topics can be reported in 'Council Diary', but hopefully over the months this column reflects a fair crosssection of the Council's deliberations.

A substantial time was spent discussing money. The Treasurer presented his budget for the coming year, with most areas of activity allocated slightly less than requested. Council approved a 10% increase in the subscription for 2005-06, making the full member subscription £36, which still represents excellent value. Council considered a revised plan for the refurbishment of the lower ground floor of De Morgan House to form an integrated, disabled-friendly conference suite, at a significantly higher cost than first envisaged. A plan was presented to ensure that these facilities will be used cost-effectively for both academic and commercial purposes, yielding a significant income over and above the costs of refurbishment, administration and operation.

Council considered a position statement from RCUK (Research Councils UK) on publication and access to UK research outputs: see www.rcuk.ac.uk/access/summary.pdf. Whilst there was agreement with its emphasis on quality assurance and communication of research output, Council expressed great concern about the effect of the proposed open access requirements, particularly on individuals with little research funding and on the publishing activities of the LMS and similar learned societies.

It is clear that the Society's revenue from traditional sources may fall in the future, with new sources required to maintain the Society's income, so necessary to support its many activities and grants. Thus the General Secretary challenged each Council member to come up with one innovative suggestion for generating money. (Of course, suggestions are welcome from any members of the Society!)

The enormous amount of work put in by the Education Committee was particularly apparent at this Council meeting when several substantial papers were presented. Amongst these was a response to the White Paper on Skills, focusing on skills of those in employment. The response reiterated the conclusions of the Smith report (in particular the need for mathematics teachers) and emphasised that current

levels of science, technology, engineering and mathematics graduates did not approach national needs. Moreover, the development of the school curriculum should not be confused with provision of adult training. The Committee's response to a HEFCE paper on 'Sustainable Development in Higher Education' highlighted that often 'sustainability' can be judged and measured only by competent mathematical modelling.

The Education Secretary gave an update on the 'Bologna Process' of harmonising higher educational qualifications across Europe, following a recent ministerial meeting in Bergen: see www.bologna-bergen2005.no. Particular concerns include the difficulty of mapping a 4-year doctoral degree and funding onto the model, as well as the incompatibility of current MMath degrees with the proposed structure.

A letter from the Council for Science and Technology, the Government's advisory body on science matters, sought the Society's views on a Universal Ethical Code for Scientists. The proposed Code refers to (i) Rigour, honesty and integrity, (ii) Respect for life, law and public good and (iii) Responsible communication. The Society will be responding on the relevance and interpretation of the Code within mathematics.

Council adjourned just in time for the Society meeting which, in particular, saw the launch of *The Book of Presidents*.

Kenneth Falconer

SPECTRAL ANALYSIS

Keen followers of the Newsletter's fortunes will already have anticipated the colour change for the new season. We hope you find the new hue acceptable: think of it as a bringer of blue sky opportunities, or a blue screen against which to promote your mathematical ambitions for the coming year.

David Chillingworth

LONDON INCIDENTS

The staff of the London Mathematical Society convey their thanks for the kind messages of concern and support that they received from members, colleagues and friends across the world. Thankfully, all staff – and to our knowledge, members – are safe and well, with none directly affected by the bombings in London in July.

LMS Newsletter

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LONDON MATHEMATICAL SOCIETY

SOUTH WEST & SOUTH WALES REGIONAL MEETING

School of Mathematics, University of Bristol

Monday 5 September 2005

- 2.00 pm LMS business meeting
- 2.15 pm Vitaly Bergelson (Ohio State) Ergodic Ramsey theory and properties of large sets
- 3.15 pm Tea
- **4.00 pm** Terence Tao (UCLA) Ergodic theory, arithmetic progressions and the primes

5.00 pm Open discussion on the LMS-IMA Frameworks Study Initiative

There will be a reception and dinner afterwards. For further details and to reserve a place at the dinner, contact Cathy Badley (Cathy.Badley@bristol.ac.uk).

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the Society meeting on Monday 5 September. Requests for support, including an estimate of expenses, may be addressed to the Programme Secretary at the Society (web: www.lms.ac.uk; email: grants@lms.ac.uk).

This will be followed by a workshop on Additive Combinatorics, focusing on recent developments concerning arithmetic progressions, from 5 – 9 September. The interplay between ergodic theory and combinatorics/harmonic analysis will be a particular focus of the workshop. Further information is on the web at www.maths. bris.ac.uk/~mabjg/bristolworkshop.html or contact the organizer Ben Green, School of Mathematics, University of Bristol (B.J.Green@bristol.ac.uk).

HONORARY MEMBERSHIP

HONOURS LIST

The London Mathematical Society has elected Professor Jean-Pierre Bourguignon of the École Polytechnique and Centre National de la Recherche Scientifique to Honorary Membership of the Society. Professor Bourquignon's work in differential

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geometry has focused on analytical and variational techniques, drawing on problems related to theoretical physics. He has made important contributions to Yang-Mills theory, spectral properties of Dirac operators, Einstein metrics and vanishing theorems.

Professor Bourguignon has been Director of the Institut des Hautes Études Scientifiques since 1994. He was President of the Société Mathématique de France from 1990-92 and President of the European Mathematical Society from 1995-98. He continues to work tirelessly on behalf of European mathematics.

Professor Bourguignon was awarded the Prix Paul Langevin de l'Académie des Sciences de Paris in 1987 and the Rayonnement Français Prize in Mathematical and Physical Sciences in 1997. His many other honours include membership of the Academia Europaea and a prize at the Palaiseau International Science Film Festival in 1987: he has participated in the making of four mathematical films and attaches great importance to the popularisation of mathematics and improving the relationship between mathematics and society.

Council has sent its congratulations to Professor Peter Grindrod (President-Designate, IMA) and Professor Len Cook (National Statistician) who were awarded CBEs in the recent Birthday Honours List.

COLLINGWOOD **MEMORIAL PRIZE**

The 2005 Collingwood Memorial Prize has been awarded to Robin J. Zigmond, Hatfield College, University of Durham. The Collingwood Memorial Prize, established in memory of Sir Edward Collingwood FRS, President of the Society 1969-1970, is awarded to a final-year mathematics student at the University of Durham who intends to continue to a higher degree in mathematics at Durham or any other university.

EUROPEAN MATHEMATICAL SOCIETY NEWS

Pavel Exner, one of the two vice-Presidents of the EMS, has been appointed to the Scientific Council of the proposed European Research Council. He is based at Charles University, Prague, and his field is mathematical physics. Pavel is the only mathematician on the Council, though there are others among the 22 members who can be expected to regard mathematics favourably.

The European Research Council will come into being as part of the EU's 7th Research Framework programme (though the amount of money it will have at its disposal is still at issue). The Scientific Council is an independent body whose purpose will be to 'determine the Research Council's strategy and ensure that its operations are conducted according to the principles of scientific excellence'.

> **David Salinger EMS Publicity Officer**

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Textbooks from Springer



Germany: L. Robbiano. University of Geneva, Italy This book is the natural continuation of

Computational Commutative Algebra 1 with some twists. The main part of this book is a breathtaking possepoloto through the computational domains of graded rings and

modules and their Hilbert functions.

2005, X, 586 p. Hardcover ISBN 3-540-25527-3 ► € 49,95 | £ 38.50

An Introduction to Number Theory

G. Evenest, T. Ward, University of East Anglia, Norwich, UK The book provides an introduction to the main streams of number theory. Starting with the unique factorization property of the integers, the theme of factorization is revisited several

times throughout the book to illustrate how the ideas handed

down from Euclid continue to reverberate through the subject.

2005. X, 302 p. 16 Ikes. (Graduate Texts in Mathematics. Vol. 232) Hardcover 158N 1-85233-917-9 ► € 44,95 | £ 35,00

Combinatorial Commutative Algebra

E. Miller, University of Minnesota, Minneapolis, MN, USA; B. Sturmfels, University of California at Berkeley, Berkeley, CA, USA

This book provides an introduction to combinatorial commutative algebra with particular emphasis on combi-natorial techniques for multigraded polynomial

rings, semigroup algebras, and determined rings.

2005. XIV, 426 p. 102 illus. Softcover ISBN 0-387-23707-0 + € 36,95 | £ 28.50

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P. Cull, M. Flahive, Oregon State University, Corvallis, OR, USA:

R. Robson, Eduworks, Corvallis, OR, USA This text, designed for sophomores studying mathematics and computer science, covers the basics of difference equations and some of their applications

in computing and in population biology.

2005. XIV. 394 p. 16 illus. (Undergraduate Texts in Mathematics) Hardcover ISBN 0-387-23233-8 • € 69.95 | £ 54.00 Softcover edition ISBN 0-387-23234-6 . € 39,95 | £ 29.50



from the reviews of the first two editions This outstanding book cannot be substitated with any other book on the present textbook market. It has every chance of becoming the standard textbook for graph showy . Acta Scientiarum Mathematicarum

3rd ed. 2005. XVI, 410 p. (Graduate Texts in Mathematics, Vol. 173) Hardcover ISBN 3-540-26182-6 ► € 69,95 | £ 54,00 Softcover edition ISBN 3-540-26183-4 . € 39,95 | £ 30.50

Frontiers of Numerical Analysis

J. Blowey, A. Craig, University of Durham, UK

This book contains detailed lecture notes on four topics at the forefront of current research in computational mathematics.

2005, DL 266 p. 52 Illus, (Universitext) Softcover ISBN 3-540-23921-9 + €49,94 | £38,50

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OBITUARIES IN THE BULLETIN

Nick Bingham (Sheffield) will imminently take over as LMS Obituaries Editor, replacing Alan Pears, who is stepping down after generously serving the Society in this capacity since 1996.

Nick would like members to let him know of the passing away of mathematicians (whether or not the deceased is an LMS member) and he can be contacted via email at obituaries@Ims.ac.uk. If you are interested in writing or contributing to an obituary, please let Nick know. The Society would like to have at hand a group of writers who can be consulted for the task of writing obituaries as the need may arise. This service is of recognisably great value and importance to the Society.

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The LMS and the Russian Academy of Sciences have been having very positive discussions over the future of the 'Young Russian Mathematicians' scheme. We hope that the final agreement will be signed very soon, and when it is the *Newsletter* and website will have a notice inviting proposals. Meanwhile, in order to help people to prepare, here is a very brief description of the new scheme.

Each year, under this scheme, up to three young Russian mathematicians will spend a few weeks in Britain giving a series of survey lectures on the work of their Russian seminar, and up to three young British mathematicians will spend a few weeks in Russia giving a series of survey lectures on the work of their school. The LMS will meet the costs of Russian visitors and the travel costs of UK mathematicians, while the host institutions of the Russian Academy of Sciences will meet the latter's local expenses.

It is intended that any mathematician in either Britain or Russia may propose to host such a visit. The proposal should include:

- (i) name and brief cv of the visitor,
- (ii) brief description of the course of lectures,
- (iii) letter or email of agreement from the head of the host department.

Details of this process will be publicised when confirmed. The Scheme will be operated by the Programme Committee on behalf of the LMS and the Governing Body of Mathematical Sciences Division of the Russian Academy of Sciences and the Managing Committee of Moscow Mathematical Society on the Russian side.

In summary, we expect to have a two-way scheme, opening up the opportunity for young British mathematicians to spend time in some of the powerful Russian departments such as those in Moscow and St Petersburg.

Young Russian mathematicians visiting Britain will still be encouraged to write survey articles – good survey articles are always welcome – but these should be submitted to the *Bulletin* of the LMS in the usual way: we have discontinued our former special arrangements for them.

Stephen Huggett LMS Programme Secretary

DIRECTOR APPOINTED

The University of Cambridge has announced the appointment of Professor Sir David James Wallace as the Director of the Isaac Newton Institute for Mathematical Sciences and NM Rothchild & Sons Professor of Mathematical Sciences. Sir David is expected to be in post at Cambridge in October 2006 and will succeed Sir John Kingman who has served as Director since October 2001.

The IMA-LMS Frameworks Study Initiative Looking at the future options for the IMA and LMS

The Councils are keen to receive comments on the issues in the Frameworks Report (available on www.lms.ac.uk).

Send your views by email

fsi@ima.org.uk, fsi@lms.ac.uk

Write to the Presidents

- The Institute of Mathematics and its Applications, Catherine Richards House, 16 Nelson Street, Southend-on-Sea SS1 1EF.
- The London Mathematical Society, De Morgan House, 57–58 Russell Square, London WC1B 4HS.

Attend the Open Meetings

- 5 September (Bristol) 5:00 pm, University of Bristol, as part of the LMS South-West and South Wales Regional Meeting (see page 3)
- 13 September (Glasgow) 6:30 pm, Lecture Theatre A005, Glasgow Caledonian University following the IMA Scottish Branch Annual Schools Day
- 20 September (London) 4:00 pm, UCL Chemistry Auditorium.
- 27 September (Manchester) as part of the IMA Lancashire and NW Branch meeting (further details to be confirmed)
- 11 October (Leeds) see below
- 12 October (Manchester) see below

Watch for Further News

Updated information on the consultation will be available from the two societies' websites, at www.lms.ac.uk/fsi.html and www.ima.org.uk/institute/fsi.htm.

Mathematics Departments Meetings

As part of the debate on the possibility of the two societies moving into a different relationship at some point in the future mathematics departments were asked to arrange meetings in their regions to discuss this document, and to offer their opinions. Meetings to this effect have been organised in Leeds and Manchester as follows:

11 October - University of Leeds

Tuesday 11 October at 3.00 pm in Room H of the School of Mathematics. The speakers will be Professor David Abrahams (University of Manchester) former Vice-President of the IMA, and Dr Stephen Huggett (University of Plymouth) LMS Programme Secretary. All members of the LMS and IMA are welcome. For further details, please contact H.G. Dales, Department of Pure Mathematics, University of Leeds (garth@maths.leeds.ac.uk).

12 October - University of Manchester

Wednesday 12 October at 12.30 pm in the Newman Building, Booth Street East which is located on the Oxford Road end of the campus. Please check the web site www.maths. manchester.ac.uk/events for further details including possible updates on the time or location. All members of the mathematics community are welcome. If you require a parking permit or further information please contact Professor I. David Abrahams (i.d.abrahams@manchester.ac.uk).

Clay Mathematics Institute Public Events@Oxford

Euclid and His Heritage

October 7 and 8, 2005 9am – 6pm daily

> Bernard Sunley Lecture Theatre St. Catherine's College, Oxford University Manor Road, Oxford

Lectures by Sonja Brentjes, Bill Casselman, Jeremy Gray, Robin Hartshorne, Alexander Jones, Ian Mueller, Eleanor Robson, Mark Schiefsky and Nigel Wilson

Mathematicians, historians, classicists, and philosophers join for a fresh look at Euclid's work and its influence on our intellectual life over a period of twenty-three hundred years. On the occasion of the first digital edition of the oldest extant manuscript of the Elements (888 AD).

A Celebration of Mathematical Thought

October 11, 2005

2pm – 6pm

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Mandela Lecture Theatre Said Business School, Oxford University Park End Street, Oxford

Presentation of the Clay Research Awards Award Lectures to be announced "Solving Equations," a Public Lecture by Andrew Wiles

Professor Wiles will survey some of the recent progress in solving classical equations, notably the Fermat equation and the equations representing elliptic curves. He will consider the problem of finding rational solutions as well as the problem of finding solutions by repeated extraction of roots.



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NEWS FROM THE EPSRC MATHEMATICAL SCIENCES PROGRAMME

Update on the EPSRC responses to the International Reviews

After the International Reviews of Mathematics, Statistics and Operational Research we published an Action Plan, stating the actions planned in response to the recommendations. The initial Action Plan can be found at the following link: www.epsrc. ac.uk/ResearchFunding/Programmes/Mathe maticalSciences/ReviewsAndConsulations/Action PlanInternationalReviewOfMathematics.htm.

Since the Reviews took place we have taken several actions and these are reported in a new document on our website which can be found at this link: www.epsrc.ac.uk/ ResearchFunding/Programmes/Mathematical Sciences/ReviewsAndConsulations/ActionsTak enInResponseToTheInternationalReviewOfM athematics.htm.

Publication of Research Councils Delivery Plans

All of the Research Councils have published their delivery plans which demonstrate the contribution that each Research Council is making towards achieving government targets. They can be found on the individual Council's websites. In addition, RCUK has published details of their priorities and activities to promote and facilitate joint Council working in the RCUK Delivery Plan. The EPSRC Delivery Plan can be found at the following link: www.epsrc.ac.uk/Publications/ Corporate/DeliveryPlan.htm.

EPSRC Response to the Algorithms Workshop Summary Report

The Mathematical Sciences and Information Communication Technology Strategic Advisory Teams have now discussed the report of the Algorithms Workshop held at Leeds University in November 2004 together with the community responses to that report's recommendations. Both unanimously agreed that the Mathematical Sciences/Computer Science interface is in need of strengthening, but that the narrow focus on algorithms emanating from the Leeds workshop was not an appropriate means of doing so. There was much to be gained for the UK by broadening the scope of any proactive action from EPSRC.

EPSRC will continue to support this interface through its existing mechanisms and would encourage the community to make full use of them. In addition to Responsive Mode, which can already fund workshops, networks, summer schools, research grants and visiting fellowships, and the flexibility of Universities' doctoral training account, there also exist a number of specific opportunities for researchers in this area. Full details can be found at the following link: www.epsrc.ac. uk/ResearchFunding/Programmes/Mathemati calSciences/ReviewsAndConsulations/EPSRCR esponseToTheAlgorithmsWorkshopSummary Report.htm.

Important news regarding this year's Postdoctoral Fellowships call

Since the last call for Postdoctoral Fellowships there have been several changes. Firstly, all applications to EPSRC have to be made through the Je-S electronic submission system. This year's Postdoctoral Fellowship applications are no exception. Secondly, as of September, EPSRC will be paying (80% of) the full economic costs of all grants awarded. Again, this will apply to Fellowships.

Due to the changes in procedures in this popular scheme, we have produced some specific guidance for Heads of Department who will have a greater role in the application process. We would advice all Heads of Departments to read through the guidance thoroughly. Guidance can be found in the call document at the following link: www.epsrc.ac.uk/CallsForProposals/CallForPo stdoctoralFellowships.htm.

2005/2006 Call for Postdoctoral Fellowships in Theoretical Physics, Theoretical Computer Science and Mathematical Sciences

The Physics, Information and Communications Technologies (ICT) and Mathematical Sciences Programmes are offering Postdoctoral Fellowships to enable the most talented young researchers to establish an independent research career, shortly or immediately after completing a PhD. The awards are for a period of up to three years and cover the salary cost of the Fellow and a small amount of travel and subsistence or equipment.

Please note that application forms for the Postdoctoral Fellowship scheme will not be available on Je-S until the end of August. Applicants should prepare all other documentation in advance to ensure sufficient time to complete the form before the deadline. Please see the call document for full details of all documentation required. All details can be found at the following link: www.epsrc.ac.uk/CallsForProposals/CallForPo stdoctoralFellowships.htm.

The closing time for all of the calls is **12.00** midday on **18 October 2005**.

Springboard Fellowships

The EPSRC Mathematical Sciences Programme is pleased to announce a second call for proposals for Springboard Fellowships, aimed at mathematicians, statisticians and operational researchers, to promote adventurous research, mobility of researchers and collaborative research with other disciplines and industry.

Springboard Fellowships provide shortterm support to enable researchers in the mathematical sciences, who are permanent employees of an eligible research organisation, to work:

- at the interface with another discipline;
- with business or industry;
- on a particularly innovative project or a short-term feasibility study.

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what have you." --- Solomon Feferman, Stanford University

Logical Dilemmas The Life and Work of Kurt Gödel John W. Dawson, Jr.

Now in Paperback; 376 pp.; E22.95 "Dawson's biography of Gödel is provocative and interesting on several fronts, and is highly recommended to anyone with an interest in logic, the foundations of mathematics or the history of mathematics." — Sam Bass, SUM Review



The aim of these awards is to provide opportunities for researchers to take time out from their normal activities in order to develop their careers in new directions and to expose them to new ways of working, with the fellowship acting as a 'springboard' for their future research. These fellowships are intended to be 'pump-priming' support that will lead to new avenues of research, new collaborations, and follow-on research projects. Further details can be found at the following web page: www.epsrc.ac.uk/ CallsForProposals/SpringboardFellowshipsCal IForProposals.htm.

Closing date for the submission of proposals is **4 October 2005**. Announcement of successful fellowships is expected to be 31 March 2006.

EPSRC MATHEMATICAL SCIENCES SAT MEETING

Summary of the May 2005 Meeting The eighth meeting of the Mathematical Sciences Strategic Advisory Team (SAT) was held on 5 May 2005 at Polaris House, Swindon. There were two main items on the agenda surrounding the development of strategic options for the future. One was looking longer term at the research priorities to put forward in the joint Research Councils' bid for funds from SR 2006 and the other was concerned with advising EPSRC on short term strategy for the Mathematical Sciences Programme.

The SAT Conference, held in February 2005, concentrated on identifying and broadly scoping the important research themes of the future. Following the Conference, the Programme Managers looked at each theme and highlighted those that they thought should be taken forward as potential SR2006 bids and those that had potential for development and support within existing EPSRC financial resources. Each SAT had been asked to further discuss these two groups in order for EPSRC and the other Research Councils to develop long-term

strategies. The SAT identified the area of risk – both the science of risk and the public perception of risk – as timely and important. They also commented that there was potential synergy between the themes of 'systems biology' and 'new mathematics and computer science at the bioscience interface'. It was important that, for a step change, the

research should focus on the new mathemat-

ics and computer science. The SAT spent the majority of the meeting discussing the activities of the Programme for 2006/07. This discussion was based on an issues paper which highlighted the concerns the Programme had identified from consultations with the community and particularly from the regional seminars. The SAT again agreed that the top priority was to earmark resources to start addressing the concerns raised by the International Review about the quality of the UK PhD. It was decided to form a working group who would scope a proposed call based on pump-priming support for an integrated PhD programme and to recommend the associated peer review process.

The second main area of concern was mathematical analysis, which the SAT concluded could benefit from similar initiatives to those that have been launched for statistics. As a result, EPSRC is working with the community to scope possible future activities whilst recognising that part of the problem is outside the remit of the Research Councils (i.e. below postgraduate level).

Other areas discussed included the desire to increase the number of Postdoctoral Fellowships (resources have been increased in the 2005/06 budget to £1.25m) and the possibility of providing more mid-career opportunities. The broadening of the Springboard Fellowships was welcomed to address the latter but the SAT did not feel that the introduction of full economic costs, which would theoretically allow academics to come into responsive mode for all or a part of their salary, would resolve the issue. 11

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Although the importance of providing interdisciplinary research was recognised, the SAT felt that within the budget constraints. further activities were lower priority. As such, the Programme is primarily identifying ways in which to facilitate the formation of good interdisciplinary research projects which would be competitive in responsive mode.

There were two other items on the agen-

da. First, the SAT discussed the report of the algorithm workshop held at the University of Leeds in November 2004 together with the responses on the report from the community. The SAT was concerned that there were several areas of mathematical sciences which had relevance to algorithm research that were not represented at the workshop and therefore the report was only a partial view of the problem. They advised EPSRC not to take forward the recommendations of the report until a broader representation of the two communities had met to discuss the issue. A similar view had been expressed by the ICT SAT. Therefore EPSRC has issued a response to the report, which highlights the opportunities that already exists for support at this interface and invites academics to engage with us to help in the development of our strategy.

The meeting finished with a discussion on ideas articulated in a letter from Peter Grindrod on behalf of some key academics as to how EPSRC could support mathematics at emerging interfaces, and on the idea to create a landmark fund to sponsor research on key grand challenge problems. The SAT agreed that the emerging interfaces mentioned were important and noted that EPSRC, and in particular Peter Hedges, was engaged in dialogue with Peter Grindrod. It was suggested that, as some of the areas were potentially important to the MOD, the views of MOD should be sought. The idea of a landmark fund was considered low priority at the moment.

Subsequent to the SAT meeting EPSRC,

along with all the other Research Councils and RCUK, has published its delivery plan (which replaces the Programmes' individual business plans). The EPSRC has also conducted a restatement of accounts exercise whereby all activities for the next two years have been realigned to the generic headings of the delivery plan. EPSRC Council will be discussing this at its October meeting. New activities for the Programme included in this restatement are:

- Specific activity to provide pump-priming for a more integrated PhD programme
- A managed programme in statistics focussed on areas highlighted in the International Review
- A mathematical analysis activity
- Funds to facilitate researchers who want to work with the engineering and/or computer sciences disciplines

As always, the Mathematical Sciences Programme would be happy to receive feedback form the wider mathematics community on any of the issues that were discussed.

> Mrs Anne Farrow **Acting Mathematical Sciences** Programme Manager



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MATHEMATICAL SCIENCES



Two Chairs in the Mathematical Sciences

The Maxwell Institute for Mathematical Sciences has been established as a joint research venture between the School of Mathematics at the University of Edinburgh and the School of Mathematical and Computer Sciences at Heriot-Watt University. It is one of five joint research institutes in engineering and mathematics involving the University of Edinburgh and Heriot-Watt University which have been established with substantial funding from the Scottish Higher Education Funding Council and the Office of Science and Technology.

Applications are invited now for two newly established chairs in the mathematical sciences. Two further positions at the level of lecturer or reader will be advertised by early 2006.

The chairs are open to individuals with outstanding research records in any area of the mathematical sciences. The successful candidates will have a commitment to developing a world-class environment for research and postgraduate training in the mathematical sciences through the newly established Maxwell Institute. It is envisaged that the appointees will have reduced undergraduate-teaching and administrative loads for the first four years in post.

The positions are available at a mutually agreed date after 1 January 2006.

Informal enguires can be made by contacting the Director of the Maxwell Institute, Professor Angus Macdonald (telephone +44 (0) 131 451 3209, email A.S.Macdonald@ma.hw.ac.uk) or the Deputy Director, Dr M.A. Singer (telephone +44 (0) 131 650 8572, email m.singer@ed.ac.uk). Further information about the Maxwell Institute, as well as further particulars about these posts, can be found at www.maxwell.ac.uk .

Applications can be made on-line at www.jobs.ed.ac.uk . Alternatively, hard copy applications may be sent to Murdo Gillanders, The University of Edinburgh, College of Science and Engineering, The Weir Building, The King's Buildings, Edinburgh EH9 3JY, UK.

Please Quote Ref: 3004833 Closing Date: 17 October 2005

INCREASING THE SUPPLY OF MATHEMATICAL SCIENCE GRADUATES

Five key bodies in mathematics, including the LMS, are leading a study, funded by the Higher Education Funding Council for England (HEFCE), to prepare a strategy to improve the uptake of courses in mathematical sciences and in mathematics-related courses in higher education. The study is intended to produce a fully costed business case for a substantial pilot project to increase the supply of mathematical science graduates.

The sponsoring organisations are: the Institute of Mathematics and Its Applications (IMA); the London Mathematical Society (LMS); the Royal Statistical Society (RSS); the Heads of Departments of Mathematical Sciences in the UK (HODOMS); and the Higher Education Academy – Mathematics, Statistics and Operational Research Network (MSOR). The study will include:

- a review of current activities that can demonstrate success in increasing participation,
- · identification of new areas,

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- analysis of any regional differences in supply and demand for HE courses,
- engagement with employers,
- interaction with other initiatives (both generic and subject-specific) aimed at widening participation in HE both nationally and internationally, and
- the design of a substantive pilot project for delivery in specific regions which can later be sustained once the funding is over.

Two consultants are working on this project – Lis Goodwin (lisgoodwin@btinternet.com) and Diane Crann (diane@churchillhouse. demon.co.uk). Any suggestions and comments you have on improving the supply of graduates in the mathematical sciences should be sent to them as soon as possible. We are interested both in projects that are currently under way and also in any new ideas you might have.

Four regionally based open conferences are being planned, to help to contribute to the initial phases of the project and explore ideas. It is hope that those attending will cover educators at all stages, careers advisers and employers. The events are being held:

- 31 October West of England
- 2 November Midlands
- 4 November York
- 9 November London

If you would like to attend one of these events contact Diane Crann. The project is scheduled for completion on 28 February 2006.

GEORGE E. HAY

George E. Hay, professor emeritus of mathematics, who was elected a member of the London Mathematical Society on 20 February 1947, died on 12 January 2005. He was born in 1914 in Durham, Ontario. He received three degrees in mathematics from the University of Toronto, culminating with his doctorate in 1939.

In 1940 Hay joined the Department of Mathematics at the University of Michigan as an instructor. He steadily rose through the ranks, becoming a professor in 1956. He worked for the US Navy at Brown University as an associate in the Office of Scientific Research and Development from 1944–45. Hay specialized in applied mathematics, specifically the theory of elasticity and mechanics, publishing a book Vector and Tensor Analysis in 1954. He was chairman of the Department of Mathematics from 1957-67, and is remembered as giving guiet and capable leadership through a difficult 10 years when financial pressures and a strong demand for highly trained mathematicians seriously threatened mathematics at the University. He was a straightforward, honest and kind person who influenced many colleagues within and outside mathematics.

MARIA SIBYLLA MERIAN AWARD

The interdisciplinary Essen Collegium of Gender Studies of the University of Duisburg-Essen, Germany presents the Maria Sibylla Merian Award for outstanding female scientists for their significant contributions to the sciences. They are looking for applications and proposals right now and this award could be very interesting for women mathematicians. The award is given to

- female scientists for their achievements in the following disciplines: natural and engineering science, economics and medicine, or
- international outstanding scientists of all disciplines who have researched in the area of civilization and gender. Members of all disciplines are invited to join.

So far the award – which will be presented this year for the fifth time – was always given to female scientists from the first category. There is a strong support for female scientists in disciplines where women are less visible and male domination is high. The target group of the Maria Sibylla Merian Award is experienced scientists who have not recently started their scientific career.

The award is endowed with €7,500. It is sponsored by the Deutsche Telekom AG. An independent, interdisciplinary jury of experts will judge and nominate the winner of the award, which will be presented at an international ceremony in November 2005.

Send proposals and applications to: Professor Dr Janshen, Essener Kolleg für Geschlechterforschung, Universität Duisburg-Essen/Campus Essen, Postfach, 45117 Essen, Germany or by email (doris.janshen@uniessen.de). Include with your application a *curriculum vitae*, list of publications and statement of research interests. Closing date is **15 September 2005**.

The Essen Collegium of Gender Studies aims to research the relations of gender, especially in the disciplines of technology, science and medicine. Visit the website www.uni-duisburg-essen.de/ekfg/ for information about the Essen Collegium of Gender Studies, the Maria Sibylla Merian Award and former awardees. 15

LONDON MATHEMATICAL SOCIETY

Friday 7 October 2005, University College London Algorithms Meeting

Martin Dyer (Leeds University) Mark Jerrum (Edinburgh University)

There will be a reception and dinner afterwards. For further details and to reserve a place at the dinner, contact Susan Oakes (oakes@lms.ac.uk).

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the Society meeting. Requests for support, including an estimate of expenses, may be addressed to the Programme Secretary at the Society (web: www.lms.ac.uk; email: grants@lms.ac.uk).

LMS PROGRAMME AND CONFERENCE FUND

Programme Committee has awarded grants to support the following conferences and meetings. These are open to all members. If you wish to attend, or would like more information, please contact the organiser.

Date/Venue	Title	Organiser/email		
9-16 September 2005 Nottingham	Quadratic Forms, Linear Algebraic Groups and Related Topics	D.W. Hoffmann detlev.hoffmann@ nottingham.ac.uk		
11-14 January 2006 Sheffield	Sheffield Homotopy Mini-Conference	S. Whitehouse s.whitehouse@ sheffield.ac.uk		
24-27 April 2006 Keele	British Applied Mathematics Colloquium 2006 (BAMC)	G. Wilks, Y. Fu y.fu@keele.ac.uk		
One week in June 2006 Leeds	Triangulated Categories in Modern Mathematics	T. Holm tholm@maths.leeds.ac.uk		

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VISIT OF PROFESSOR D. LEBEDEV

Professor Dmitry Lebedev (Institute for Theoretical & Experimental Physics, Moscow) is visiting the University of York from 28 August -24 September, giving lectures on 30 August and 1 September. During his visit, Professor Lebedev will also give lectures at the University of Loughborough on 14 September and at the University of Durham on 23 September. For further details of this visit, please contact Dr Maxim Nazarov (mln1@york.ac.uk).

VISIT OF DR J.A. SANDERS

Dr J.A. Sanders (Free University, Amsterdam) is visiting the UK from 1-30 September, partially supported by an LMS Scheme 2 grant. Dr Sanders is a specialist on normal forms, averaging methods and integrable systems. During his visit he will lecture at Lancaster University (contact R. Tucker: Robin.Tucker @lancaster.ac.uk), University of Leeds (contact A.V. Mikailov: A.V.Mikailov@leeds.ac.uk), Loughborough University (contact E.V. Ferapontov: E.V.Ferapontov@lboro.ac.uk) and University of Kent at Canterbury (contact J.P. Wang). For more information contact Jing Ping Wang (j.wang@kent.ac.uk).

BRITISH TOPOLOGY MEETING

The 20th British Topology Meeting will take place at the University of Bristol from 12-14 September. It is supported by an LMS conference grant. As usual, the BTM seeks to provide a forum for British topologists and for researchers in related areas to exchange ideas and encourage collaboration. The invited key note lectures will be given this year by: • Ezra Getzler (Northwestern)

Sasha Voronov (University of Minnesota)

Further details can be found on the web at www.maths.bris.ac.uk/research/pure/btm/bt m.html or contact Andrey Lazarev (a.lazarev@bristol.ac.uk).

LONDON MATHEMATICAL SOCIETY

in association with the Isaac Newton Institute for Mathematical Sciences

Spitalfields Day

Einstein and Beyond

Isaac Newton Institute, Monday 7 November 2005

Organiser: Paul Tod (Oxford)

Mathematical Relativity.

- 14:00 15:00 Abhay Ashtekar (Penn State) Quantum Riemannian geometry and its ramifications
 15:00 - 16:00 Karsten Danzmann (Albert-Einstein-Institut & Hannover) Gravitational wave astronomy: The large detectors are going into operation!
 16:00 - 16:30 Tea
 16:30 - 17:30 Roger Penrose (Oxford) (title to be advised)
 17:30 - 18:00 Wine and Beer Reception
- The talks at this meeting are aimed at a wide mathematical audience (graduate students working in classical and quantum theories of gravity are especially welcome) and cover a range of theoretical and experimental developments growing from Einstein's General Theory of Relativity. Anyone interested is welcome to attend. This Spitalfields Day is linked to the Isaac Newton Institute programme *Global Problems in*

Please let Tracey Andrew at the Institute know by **31 October 2005** if you intend to come (tel: 01223 335984; fax: 01223 330508; email: t.andrew@newton.cam.ac.uk).

There are limited funds available to assist research students to attend, please apply by **31 October** to Tracey Andrew by email or post at the Newton Institute, 20 Clarkson Road, Cambridge CB3 0EH.

Scientific enquiries may be addressed to Paul Tod (paul.tod@st-johns.oxford.ac.uk).



OFFERING THE FINEST IN SCHOLARLY MATHEMATICAL PUBLISHING

John von Neumann: Selected Letters

Miklós Rédei, Eatvos Lorand University, Budapest, Hungary, Editor

John von Neumann was perhaps the most influential mathematician of the twentieth century. This collection of his letters illustrates both his brilliance and his strong sense of responsibility. It is the first substantial compilation of his correspondences, giving a rare inside glimpse of his thinking on mathematics, physics, computer science, science management, education, consulting, politics, and war.

History of Mathematics, Volume 27: 2005; approximately 328 pages; Hardcover; ISBN 0-8218-3776-1; List US\$59; All AMS members US\$47; Order code HMATH/27

The St. Petersburg School of Number Theory B. N. Delone



For over two centuries, the work of the St. Petersburg mathematicians in number theory has constituted a glorious contribution to mathematics. This volume acquaints the reader with the most important works of six eminent members of the St. Petersburg school: P. L. Chebyshev, A. N. Korkin, E. I. Zolotarev, A. A. Markov, G. F. Voronoï, and I. M. Vinogradov.

History of Mathematics, Volume 26; 2005; 278 pages; Hardcover; ISBN 0-8218-3457-6; List US\$59; All AMS members US\$47; Order code HMATH/26

Also in the History of Mathematics Series ...

HMATH/24

Hausdorff on Ordered Sets

J. M. Plotkin, Michigan State University, East Lansing, MI, Editor

History of Mathematics, Volume 25: 2005; 332 pages; Softcover; ISBN 0-8218-3788-5; Ust US\$69; All AMS members US\$35; Order code HMATH/25

A History of Analysis Hans Niels Jahnke, University of Essen, Germony, Editor History of Mathematics, Volume 24: 2003; 422 pages; Hardcover; ISBN 0-8218-2623-9; List US\$89; All AMS members US\$71; Order code

Mathematics Unbound:

The Evolution of an International Mathematical Research Community, 1800–1945

Karen Hunger Parshall, University of Virginia, Charlottesville, VA, and Adrian C. Rice, Randolph-Macon College, Ashland, VA, Editors

History of Mathematics, Volume

0-8218-2124-5: List US\$85: All AMS

members US\$68; Order code

HMATH/23

23: 2002: 406 pages; Hardcover; ISBN

Copublished with the London Mathematical Society. Members of the LMS may order directly from the AMS at the AMS member price. The LMS is registered with the Charity Commissioners.



ISRAMA 2005

The Calcutta Mathematical Society is organizing an International Symposium on Recent Advances in Mathematics and its Applications (ISRAMA 2005), on the occasion of its ninetyseventh anniversary. The symposium will take place from 17-19 December in Kolkata (Calcutta), India, with the aim of providing a forum for participating scientists from India and abroad to exchange ideas and to encourage scientific collaboration on recent developments in different areas of mathematics and its applications. It is hoped that this meeting will help the fostering of friendship among the scientists of the participating countries. The programme will include invited lectures by eminent researchers as well as contributed papers. All deliberations in the symposium will take place in English. Topics will include: &

- Algebra, Discrete Mathematics
 Theoretical Computer Science
- Analysis & Topology and their Applications
- Geometry and its Applications
- Dynamical Systems, Chaos and Fractals
- Continuum Mechanics
- Plasma Physics
- Control Theory and Optimization Theory
- Bio-mechanics
- Applications of Mathematics to Environmental Problems
- History and Philosophy of Physical Science
- Quantum Information Theory
- Relativity and its Applications

Authors are requested to submit two copies of abstracts of their papers, not exceeding 500 words, indicating the motivation of the problem, its method of solution and important results. Abstracts should reach the Secretary of the Society or the Convener of the symposium no later than **31 October**. All abstracts will be screened for presentation in the symposium. Authors who intend to publish their papers in the *Proceedings of the Calcutta Mathematical Society* should forward the full texts of papers in triplicate, not later than three months after the symposium.

The registration fee for participants from countries other than India is US\$200 (this cost includes accommodation). For further information contact Professor M.R. Adhikari, Secretary, Calcutta Mathematical Society, AE-374, Sector-1, Salt Lake City, Calcutta, India (email: cms@cal2.vsnl.net.in, cms_mra@ yahoo. co.in).

SIXTH CENTURY CONFERENCE IN REPRESENTATION THEORY

The University of Aberdeen is celebrating 500 years of the teaching of mathematics with a major expansion in the number of its academic staff. Five 'Sixth Century Chairs' have been filled and four of these are in the area of Representation Theory: Professors Dave Benson, Meinolf Geck, Markus Linckelmann and Geoffrey Robinson. There have been three other new appointments in this area. It has been decided to celebrate the events with a Sixth Century Conference in Representation Theory, from 26-29 October (arrival day Tuesday 25 October). The main speakers are:

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- M. Broue (Paris VII, France)
- D.J. Benson (Aberdeen)
- J.F. Carlson (Georgia, USA)
- R. Carter (Warwick)
- J. Chuang (Bristol)
- K. Erdmann (Oxford)
- M. Geck (Aberdeen)
- G. Hiss (Aachen, Germany)
- M. Linckelmann (Aberdeen)
- J. Rickard (Bristol)
- G.R. Robinson (Aberdeen)
- R. Rouquier (Leeds)
- J. Thevenaz* (Lausanne, Switzerland) *provisional acceptance.

Further information and registration details for participants can be found by following the links at www.maths.abdn.ac.uk.

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Introduces a new mathematical topic known as 'circle packing', taking the reader from first definitions to novel results. It can be enjoyed for visual appeal, the elegance of circle geometry, the clean theory, classical connections, or applications. £35.00 | HB | 368pp

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Poisson Geometry, Deformation Quantisation and Group Representations

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Within algebraic topology, the prominent role of multiplicative cohomology theories has led to a great deal of foundational research on ring spectra. This book collects the recent results in the field. London Mathematical Society Lecture Note Series, 315 £35.00 | HB | 240pp LMS Member Price £28.00

Textbook

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James J. Tattersall

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This one-semester introductory course in number theory is now in its second edition. Students new to number theory, whatever their background, will find this stimulating and entertaining. **£55.00**[HB] 442pp **£19.99**[PB

Graduate Textbook General Theory of Lie Groupoids and Lie Algebroids

Kirill C. H. Mackenzie

Comprehensive modern account of the theory of Lie groupoids and Lie algebroids, and their importance in differential geometry. London Mathematical Society Lecture Note Series, 213 £50.00 | PB | 540pp LMS Member price £40.00

Recent Perspectives in Random Matrix Theory and Number Theory Edited by F. Mezzadri and N. C. Snaith

Provides the necessary grounding as well as informing the reader of recent progress. London Mathematical Society Lecture Note Series, 322 £35.00 | PB | 528pp LMS Member Price £28.00

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Nonlinearity

www.iop.org/journals/non

Your invitation to the Nonlinearity scientific meeting 9th September 2005 We are pleased to present six invited speakers providing talks on a range of topics within the field of Nonlinearity. Organized by Carl Dettmann, this event is completely FREE of charge and open to anyone interested in attending.

The invited speakers and their provisional topics are

J Lega, University of Arizona, Tuscon, USA On the stability of local deformations of an elastic filament

France

R Deegan, University of Bristol, UK Cracks and sparks

M Brenner, Harvard University, Cambridge, MA, USA

C Liverani, Università di Roma 'Tor Vergata', Italy Dynamical systems as degenerated Markov chains

C Le Bris, CERMICS-ENPC, Marne-La-Vallée Cedex. K Khanin, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK Some mathematical challenges in molecular Rigidity in dynamics simulation and quantum chemistry

TBA

This meeting will be held from 2.00pm at Institute of Physics, 76 Portland Place, London W1B 1NT

Contact Elaine Longdon-Chapman, Group Publisher, for further details: elaine.chapman@iop.org

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METRIC NUMBER THEORY AND ITS APPLICATIONS A meeting in honour

of Maurice Dodson

A two-day meeting on Metric Number Theory and its Applications will be held from 3-4 October at the University of York to mark the retirement of Maurice Dodson. The first day will concentrate on the recent developments in metric number theory centred round the York and Minsk schools and their associates. The second day will broaden the mathematical contents to other areas of number theory, dynamical systems, biological mathematics and topology – all areas of mathematics in which Dodson has been an active researcher. The speakers will include:

- Basil Bernik (Minsk)
- Dusa McDuff (SUNY)
- Michel Mendes-France (Bordeaux)
- Christopher Zeeman

The meeting is supported by an LMS conference grant. For further information contact the organiser Sanju Velani (slv3@york.ac.uk) or visit news at www. vork.ac.uk/depts/maths.

CIMPA 2006

The Centre International de Mathématiques Pures et Appliquées (CIMPA) will be running the following courses during 2006:

- Commutative algebra, Hanoi, Vietnam, 26 December '05-7 January '06
- Propagation of waves, Cuernavaca, Mexico, 16-27 January
- Orthogonal families and semi-groups in analysis and probability, Merida, Venezuela, 30 January-11 February
- Homological methods and representations of non-commutative algebras, Mar del Plata, Argentina, 6-17 March
- Recent topics in geometric analysis, Tehran, Iran, 20 May-2 June

- Financial information systems. Kuala Lumpur, Malaysia, 22 May-2 June
- Differential geometry: Theory and Applications, Shanghai, China, 7-18 August
- New trends in singularity theory, Madrid, Spain, 14-21 August
- Optimization and control, Castro Urdiales, Cantabria, Spain, 28 August-8 September

For further information and to register for any of these events, contact CIMPA, 'Le Dubellay', 4 avenue Joachim - Bât. B, 06100 Nice, France (tel: +33 4 92 07 79 30; fax: +33 4 92 07 05 02; email: cimpa@unice.fr), or visit www.cimpa-icpam.org.

INDUCTION COURSE

The Maths Stats and OR Network is hosting its annual Induction Course for lecturers new to teaching mathematics in UKHE from 15-16 September. This course is aimed at people who have started teaching mathematics in UK higher education institutions within the last three years, whether they are new graduates, or coming from industry or from outside the UK.

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The course will start with an afternoon session on 15 September and finish at lunchtime on 16 September. Topics will include:

- Teaching and supporting learning
- Design and planning of learning activities
- Assessment and feedback
- Systems to support learning
- The computer environment
- Sharing experience

The course will be hosted by the School of Mathematics at the University of Birmingham, with accommodation within easy walking distance. The cost, which is subsidised by the Network, will be £90.00 inclusive. For gueries or booking please contact Janet Nuttall (email: J.Nuttall@bham.ac.uk. tel: 0121-414-7095). More details are available online http://mathstore.ac.uk/workshops/induction2005/index.shtml.

THE LONDON MATHEMATICAL SOCIETY

NEWSLETTER



Symplectic geometry is the geometry underlying Hamiltonian dynamics, and symplectic mappings arise as time-1-maps of Hamiltonian flows expectacular rigidity phenomena for symplectic mappings discovered in the last two decades show that certain things cannot be done by a symplectic mapping. For instance, Gromov's famous "non-squeezing" theorem states that one cannot map a ball into a thinner cylinder by a symplectic embedding.

eaim of thisbook is to show that certain other things can be done by symplectic mappings is is achieved by various elementary and explicit symplectic embedding constructions, such as folding', wrapping', and "lifting'. ese constructions are carried out in detail and are used to solve some specific symplectic embedding problems.

e exposition is self-contained and addressed to students and researchers interested in geometry or dynamics



Pricesaresubject to change

MODELS AND METHODS FOR HUMAN GENOMICS

A conference on Models and Methods for Human Genomics will be held at Ayas-Champoluc, Aosta Valley, Italy from 23-27 January 2006. The aim of the conference is to present the state of the art of models, algorithms, software and applications of the human genomics frontier, where mathematical and medical, economical and social aspects will be considered. Visit the website www.fimaonline.it/conference06 for further information and registration.

CONFERENCE IN HONOUR OF TOM WILLMORE

A one-day conference in honour of Professor Tom Willmore will be held at Durham University on 5 October. Tom was professor of mathematics at Durham from 1965 to his retirement in 1984. He was also a member of the London Mathematical Society from 1940 until his death in January 2005, being Vice-President from 1977-79. There will be a short ceremony on the day of the conference, during which Room CM 221 in the department will be named after Tom. This will be followed by a buffet lunch. The talks, which will take place in the Willmore Room, will be given by: • Fran Burstall (Bath)

- Fran Burstan (Bath)
- Frédéric Hélein (Paris 7)
- Ulrich Pinkall (TU Berlin)
- Francisco Urbano (Granada)

The organisers would appreciate your letting them know if you plan to attend. Limited financial help towards travel expenses for participants may be available; please contact one of the organisers for further details. This event is supported by a grant from the LMS.

For further information visit the conference website www.maths.dur.ac.uk/~dma0jb/ ydgd.html or email John Bolton (john. bolton@durham.ac.uk) or Wilhelm Klingenberg (wilhelm.klingenberg@durham.ac.uk).

JUNIOR MATHEMATICAL CONGRESS 2006

The European Congress of Mathematics is organized every four years, and alongside its other satellite activities is the European Junior Mathematical Congress. This is designed to foster the active participation of future mathematicians and is organized every second year, according to specific age conditions.

The participants are mainly schoolchildren aged between 13-19 years old, and their teachers, but there is also a student section. The seventh Junior Mathematical Congress will be held in Tg-Mures, Romania from 25 June – 2 July 2006.

For further information and registration, please contact Péter Körtesi, Chair of the Organizing Committee, H 3515 Miskolc, PO Box 10, Hungary (tel/fax: 00-36-46-565146; email: matkp@uni-miskolc.hu) or visit www.uni-miskolc.hu/matjun7/.

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QUADRATIC FORMS, LINEAR ALGEBRAIC GROUPS

A workshop on Quadratic Forms, Linear Algebraic Groups and Related Topics will be held at the School of Mathematical Sciences, University of Nottingham from 9-16 September. The Scientific Committee of this meeting consists of:

- Eva Bayer-Fluckiger (EPFL, Lausanne, Switzerland)
- Detlev Hoffmann (University of Nottingham, UK)
- Ulf Rehmann (University of Bielefeld, Germany)
- Burt Totaro (Cambridge University, UK)

The themes of the workshop will centre on some of the most recent advances in the algebraic theory of quadratic forms, linear algebraic groups and related topics such as, for example, algebraic K-theory, Galois coho-

THE LONDON MATHEMATICAL SOCIETY

NEWSLETTER

mology, algebras with involution. The scientific programme of this workshop will take place in the week 12-16 September (Monday-Friday) and will consist of 11 invited talks on topics of strong current interest, plus a number of shorter talks in which younger researchers will also have an opportunity to present their contributions to the topics covered by this workshop. The invited speakers include:

- Ricardo Baeza (Universidad de Talca, Chile)
- Skip Garibaldi (Emory University)
- Nikita Karpenko (Université d'Artois)
- Boris Kunyavskii (Bar Ilan University)
- Ján Minác (University of Western Ontario)
- Ivan Panin (Steklov Institute)

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- Raman Parimala (Tata Institute)
- Markus Rost (Universität Bielefeld)
- Jean-Pierre Serre (Collège de France)
- Alexander Vishik (IPPI, Russian Academy of Sciences)

A special feature of this workshop will be a one-day training programme on Friday 9 September (preceding the scientific part of this workshop). This training session is meant primarily for PhD students and postdocs and will be offered in collaboration with the University of Nottingham's Staff & Educational Development Unit. The aim is to train young researchers in techniques of communicating effectively when giving mathematical talks.

For further information on this workshop and details on how to register, please visit the conference website www.maths.nottingham.ac.uk/personal/pmzdwh/Workshop2005/ qfnott05.html or contact one of the local organizers: Detlev Hoffmann (Detlev. Hoffmann@nottingham.ac.uk) and Susanne Pumplün (Susanne.Pumpluen@nottingham. ac.uk).

This workshop is funded by grants from the LMS, from EPSRC, and by the European Research and Training Network Algebraic K-Theory, Linear Algebraic Groups and Related Structures. There are limited funds available to support the participation of residents of countries of the former Soviet Union or of Scheme 5 countries and of UK-based research students. Those who are eligible and wish to be considered for support should mention this at the time of registration.

GRESHAM LECTURES 2005 Geometry and other Mathematical Sciences

Professor Robin Wilson: Gresham Professor of Geometry

From Caliphs to Cambridge

Following on from last year, this series of lectures traces the historical development of mathematics in the thousand years from Islamic Baghdad, via Middle Ages Spain and Renaissance Italy and England, to the world of Isaac Newton. The story will be further developed in future lectures.

Who invented algebra? Wednesday 5 October

Arabic mathematicians embraced the mathematics of Ancient Greece and India. What did they do, and how did their achievements influence Europe in the Middle Ages? We trace the story up to the establishment of universities, the development of perspective in art, and Fibonacci's problem of the rabbits.

Who invented the equals sign? Wednesday 26 October

With the invention of printing, mathematical writings become widely available for the first time. What influence did this have? We discuss this question in the context of 16th-century navigation and astronomy, the solving of equations, and some breakthroughs in geometry and algebra, and ask: is this a Record?

Who invented the calculus?

Wednesday 16 November

The development of the calculus brought

together two seemingly unrelated problems: how do things change, and how large are they? We develop the story from the early days of logarithms in Gresham College, to Newton's work on gravitation and the calculus, and ask: Did the apple really fall on Newton's head?

Joint meeting with the British Society for the History of Mathematics History from below: mathematics, instru-

ments and archaeology Stephen Johnston (Museum of the History of Science, Oxford) Thursday 3 November

In recent decades, archaeologists working on

sites such as the Mary Rose have recovered a range of simple mathematical instruments. Compared to typical museum artefacts, they are relatively humble wooden devices. Yet they shed important light on the distribution and variety of mathematical skills in early modern England.

All the lectures are held at Gresham College, Barnard's Inn Hall, Holborn, London EC1N 2HH (near Chancery Lane tube station) at 1 pm and 6 pm on Wednesday evenings, apart from the joint meeting which is on Thursday 3 November at 6 pm (reception at 5.30). Entrance free. Telephone: 020 7831 0575; website: www. gresham.ac.uk.

RECORDS OF PROCEEDINGS AT MEETINGS

ORDINARY MEETING

held on *Friday 10 June 2005* at the Mathematical Institute, Oxford, during a Colloquium. About 100 members and visitors were present for all or part of the meeting.

The meeting began at 4.25 pm, after the Colloquium had been opened by Professor T.J. LYONS FRS, and was Chaired by the LMS President Professor F.C. KIRWAN FRS.

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

The President, on Council's behalf, presented a certificate to the 2004 Honorary Member of the Society, Professor I.M. Singer.

The Colloquium then resumed with Professor Lyons in the Chair.

Professor I.M. Singer gave a lecture on *The projective Dirac operator* and its fractional analytic index.

The meeting was followed by an informal reception.

RECORDS OF PROCEEDINGS AT MEETINGS

ORDINARY MEETING

held on *Friday 17 June 2005* at University College London. About 60 members and visitors were present for all or part of the meeting.

The meeting began at 3.00 pm, with the President, Professor F.C. KIRWAN FRS, in the Chair. Four people were elected to Ordinary Membership: J. Fliege, J.E. Gough, H. Koohy, D. Martin; two people were elected to Associate Membership: P.N.J. Eagle, J.E. Hinchcliffe; and two people were elected to Reciprocity Membership: J.P. Howard, T.M. Rassias.

One person signed the book and was admitted to the Society.

The President, on Council's behalf, proposed that Professor J-P. Bourguignon, of the Institut des Hautes Études Scientifiques, be elected to Honorary Membership of the Society. This was approved by acclaim.

The President then announced the awards of the prizes for 2005:

Pólya Prize – Professor Sir Michael Berry FRS (University of Bristol);
Senior Whitehead Prize – Professor Keith Moffat FRS (University of Cambridge);
Berwick Prize – Dr Iain Gordon (Glasgow University);
Whitehead Prizes – Professor Ben Green (University of Bristol),

Dr Bernd Kirchheim (University of Oxford), Professor Neil Strickland (University of Sheffield), Dr Peter Topping (University of Warwick).

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

The President introduced a lecture given by Professor J. Barrow-Green on *An indulgent freedom: 100 years of presidential addresses*, on the occasion of the launch of *The Book of Presidents: 1865-1965*.

The President then introduced the 2004 Naylor Prize Lecture given by Professor R. Jozsa on *An invitation to quantum computation and recent theoretical developments*.

After tea, the President introduced a lecture given by Sir Roger Penrose on *Quanglement, spin-networks, and twistor theory.*

After the meeting, a reception was held at De Morgan House, at which the President opened the *Faces of Mathematics exhibition*. The reception was followed by a dinner at the II Fornello Restaurant.

LMS MEETING 17 June 2005

The meeting opened with An indulgent freedom: 100 years of Presidential addresses by June Barrow-Green, given on the occasion of the launch of The Book of Presidents. Many of the older accompanying photographs were taken from the collection assembled by Robert Tucker who had been Secretary from 1866-1902. This had been on loan to the Science Museum in 1981 but was repatriated, catalogued and completed by the Society's Administrator, Susan Oakes. Presidential addresses have been very varied, from major reviews to the highly specialized. Pure mathematics had increasingly dominated. Among the more important were those of Smith, Greenhill and Jeffrey.

Richard Jozsa (Bristol), the 2005 Naylor Prize winner, then spoke on *An invitation to quantum computation and recent theoretical developments*. Bits in a quantum computer (qubits) allow linear superpositions of 0 and 1 states, unlike classical bits, but the really crucial new features in quantum computing are quantum measurement and quantum entanglement. The first of these implies irreversible loss of information when a measurement is made. Josza had strengthened the known impossibility theorem for duplication of a quantum state to show that one needed at least the full information of the second copy.

Quantum entanglement depends on the fact that the state space of n qubits is the tensor product of the individual qubit states, rather than the Cartesian product as in the classical case. An n-qubit state need not be the product of 1-qubit states. Quantum gates are defined by unitary operations on the state: these cannot be efficiently simulated on a classical computer. They can be modelled using three basic 2-qubit gates: an algorithm involves applying them to pairs in n

qubits, followed by measurement of the leftmost bits. Examples of the improved efficiency possible were given, some being solvable in a single step. However, the classic problem of satisfiability, 'given a Boolean formula in n variables, are there values for which it is true?', to which any NP (nondeterministic polynomial time) problem can be reduced, requires $O(\sqrt{2^n})$ time.

This raises the issue of what information an *n*-qubit state can give. One key possibility is 'pattern recognition' of periodicity. This is involved in Shor's famous quantum factoring algorithm. Further examples are the hidden subgroup problem for symmetry of functions on groups, and Pell's equation. It is not clear if all algorithms are of this type, but Jozsa suggested that quantum algorithms are classical algorithms 'punctuated by quantum effects'. This led on to consideration of models of computing, in particular the methods based solely on measurements relative to carefully-chosen bases at each step.

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The conclusion that the power of entanglement is offset by the loss of information in measurement may imply that quantum methods cannot efficiently solve NP complete problems. This limitation on computing power may be a fundamental principle for physical theories.

After tea, Sir Roger Penrose (Oxford, 2004 De Morgan medallist) spoke on *Quanglement, spin networks, and twistor theory.* He noted that (i) even simple quantum particle detection implied some superluminal connection between points on the wavefront, and (ii) accounting for entangled state measurements at separated points required information to travel into the past. He then described two ways of encoding quantum geometry which have appropriate features to describe entanglement.

Spin networks, which are used in loop quantum gravity, are based on the idea of

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labelled graphs whose vertices obey the usual spin rules. One can assign norms to such graphs combinatorially. It had been shown that in the large N limit one can reconstruct usual Euclidean space. Although these networks are static and give an incomplete explanation of phenomena, they were a motivation for twistor theory.

Twistors can be introduced by considering the space PN of null rays in flat Minkowski spacetime. The transformation of the celestial spheres of relatively moving observers is conformal, but to give this an adequate setting one has to complexify PN. Doing so leads to the complex manifold PT, where helicities are attached to the rays. The correspondence with Minkowski space is related to the Klein correspondence and to classical results of Lie. Considering the SL(2,C)-spinor description of a massless spinning particle leads to the representation of twistors as spinor pairs.

Quantization by making twistors and dual twistors non-commuting leads to helicity eigenstates given by homogeneous holomorphic functions on PT, the wave functions in Minkowski space being their contour integrals. Inspection of the Čech cohomology of the non-singular regions shows the wave functions really correspond to cohomology classes. Cohomology is non-local, a point illustrated, literally, by the famous tribar invented by Penrose and his father and used in Escher's art, but measurement of the wave function is local: this may capture point (i). Similarly representing systems of *n* particles in the cohomology of a tensor product of twistor spaces may provide a route to description of (ii).

> Malcolm MacCallum Queen Mary, University of London

LMS RECEPTION

The Society Meeting was then followed by a reception at De Morgan House at which



Ian Cassels & Trevor Stuart

members and guests had the opportunity to view the Faces of Mathematics exhibition and purchase copies of The Book of Presidents. This must have been a record for the largest number of past, present and possibly future Presidents in one room at the same time: at least seven were counted. Several members took advantage of the unique opportunity to have their copy of the book multiply signed.

The Faces of Mathematics exhibition focus-

es on the personalities of twenty influential mathematicians, in the form of large black and white portraits. It aims to penetrate the world of mathematics research and presents the human side of this often austere and challenging area

of modern science.

Alongside each of

Nick Gilbert





John Ball, Stephen Huggett & Terry Wall



LMS President, Frances Kirwan



Ian Cassels & Nigel Hitchin



Kenneth Falconer & Marc Atkins

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the portraits, a text-based display panel conveys the subject's research interests and personal viewpoint on mathematics.

The project was funded by a Partnership in Public Understanding Award from the Engineering and Physical Sciences Research Council. Nick Gilbert (Project coordinator) is a Senior Lecturer in Mathematics at Heriot-Watt University, Edinburgh, He regularly publishes research work in group theory and topology, and has a particular interest in the public understanding of mathematics. He is a London Mathematical Society Holgate Lecturer. The photographs were taken by Marc Atkins who has lived and worked in Europe and North America and has exhibited extensively including London, Paris, Rome and New York. His work has been published in books and magazines worldwide, and features in both private and public collections, including the National Portrait Gallery, London.

Nick Gilbert has kindly agreed that the set of 'Faces' should be housed at De Morgan House. Once the current modification work on DMH is complete it is planned to find appropriate places throughout the building to display as many as possible.



Oliver Penrose

BOOK REVIEW

Complexities: Women in Mathematics, edited by Bettye Anne Case and Anne M. Leggett. Princeton University Press, 2005, \$35.95, £22.95 cloth, pp 456, ISBN 0-691-11462-5.

This is a big book, and I originally thought I would just read a few sections that looked interesting and review them. So I chose the subchapter 'Having a Life' which includes sections titled 'The Two-City Existence' and 'Tenure Track, Mommy Track', themes which often occur in any discussion including the words, 'women' and 'mathematics'. It was strange to read words that I myself could have written: having ignored colleagues advice 'Don't have children until you get tenure' Susan Landau writes 'I had my first child at 31, my second at 33. At 34 I have mv family even if I don't have academic permanence'. How many male mathematicians are advised not to have children before they have a permanent job?

So I decided to read the whole book. The first chapter 'Inspiration' details the lives of successful female mathematicians from the 19th and 20th centuries. I particularly enjoyed the pages written by Constance Reid on her sister Julia Robinson, as much because it was about being a sister as about being a mathematician. The section on Grace Chisholm Young, in particular the letter from her husband Will, explaining why it was best that their joint work was published under his name is fascinating, and reminded me of the poem 'Why Dorothy Wordsworth is not as famous as her brother' by Lynn Peters.

The book then concentrates on how the Association for Women in Mathematics (AWM) came into existence. Lenore Blum writes 'I think it is fair to say that the AWM had its birth at the Joint Mathematics Meetings (JMM) in Atlantic City in 1971'. She comments that at this meeting 'Of the 15 invited hour speakers none were female; of the more than 300 American Mathematical Society ten-minute talks, about 15 were given by women (5%)." The female mathematicians present were clearly galvanised to act. A product of 70's feminism, within four years AWM was admitted as an affiliate member of the Conference Board of Mathematical Sciences, the umbrella society for mathematical associations in the United States. AWM clearly fulfilled a role and has continued to do so for the past three decades. They organise conferences, symposium and workshops. In particular, the AWM Noether Lecture has been delivered at each JMM by a senior female mathematician since 1980. Sonia Kovalevsky High School Mathematics Days have been running since 1987, they include mathematical and career talks and give high school students the chance to talk informally to women mathematicians. As well as organising these events AWM awards travel grants. the Alice T. Shafer Prize for Excellence in Mathematics by an Undergraduate Woman and the Louise Hay Award for Contributions to Mathematics Education.

Chapter III is called 'Choices and Challenges', it includes the subchapter 'Having a Life' I mentioned earlier, along with 'A Dual Triumph', biographical and autobiographical pieces on the lives of black women mathematicians, and 'Inside the Academy' and 'Outside the Academy', per-

'Into a

includes

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Karen Uhlenbeck. This book is a fascinating anthology of personal experiences of female mathematicians, with facts and statistics inserted along the way to put these comments in context.

As I am writing this review I am receiving emails from members of the LMS Women in Mathematics Committee regarding: organisation of the next Mary Cartwright lecture: whether the UK should host the Twelfth General Meeting of European Women in Mathematics; and how the RAE should assess part-timers. Our email debates are vigorous and direct, we often disagree (the cartoon in the March 2005 issue of the LMS Newsletter upset some of us greatly, whilst others thought it amusing), we are (almost) all women in mathematics, but that is where the similarity ends. I think we do a good job, both the Mary Cartwright Lecture and the (now) annual Women in Mathematics Dav are verv successful events. We have recently set up the LMS Childcare Grants (already several have been awarded), and the LMS Grace Chisholm Young Fellowships to help mathematicians whose careers have been interuppted by familv responsibilities, relocation of partner or other similar circumstances. The Daphne Jackson Fellowship for Returning Mathematicians is also awarded by the committee. Having read this book I have renewed energy to reply to the emails from my fellow committee members and address the issues peculiar (or not) to women in mathematics. But, maybe more importantly, this book has reminded me that women can and do make great mathematicians (sitting in my office surrounded by male colleagues it is easy to forget) and I return to my maths problems with renewed confidence. As Barbara Brown Flinn writes 'There's something very special, a subliminal confidence boost we all get, in hearing myriad versions of success stories, told by

women together, all of whom are a lot like us."

Rachel Camina Cambridge University

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The Book of Presidents 1865-1965 Dampor H. Heilhon

Hundardonald Hlanfler, Hebert. W. Mi MATAM Gor Marin, E.T. Challeten S. Chapma & G. L.

The London Mathematical Society was established during the energetic and confident heyday of Victorian Britain. Although several learned societies pre-date it, the LMS can claim to have led the way in a number of respects: firstly, in the rigorous reviewing standards it set from the outset, with two independent reviewers being appointed for each paper submitted to the Proceedings; and secondly, in its acceptance of women as full members, which was progressive for its day.

This volume, which contains over eighty photographs, concentrates on the first 100 years of the Society's existence and traces its evolution through its Presidents and De Morgan Medallists, each of whom was a pre-eminent mathematician of his or her day. Through them we learn which branches of the discipline were in vogue at any particular time, and come to appreciate the Society's rich history.

The Book of Presidents 1865-1965 is available from the London Mathematical Society. Email lms@lms.ac.uk to place your order. The LMS members price is £15, the full price is £19.

Heilbronn Institute for Mathematical Research

OPENING CONFERENCE

29 - 30 October 2005

at the Mathematics Department, University of Bristol

SPEAKERS:

D. Aldous (Berkeley) K. Ball (University College, London) A. Granville (Montreal) B. Green (Bristol) R. Heath-Brown (Oxford) A. Okounkov (Princeton) P. Seymour (Princeton) A. Vershik (St Petersburg)

For further information and registration form see www.maths.bris.ac.uk/heilbronn/heilbronn.html

WORKSHOP

The Institute plans to have regular Workshops and Conferences. The first Workshop will be on *Number Theory and Polynomials*, 3-7 April 2006, organised by James McKee and Chris Smyth. The participants will include:

- F. Amoroso (Caen)
- F. Beukers (Utrecht)
- P. Borwein (Simon Fraser)
- A. Dubickas (Vilnius)
- T. Erdelyi (Texas A & M)
- M. Filaseta (South Carolina)
- M. Mossinghoff (Davidson)
- I. Pritsker (Oklahoma State)

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NEWSLETTER

POPULAR LECTURES REPORT

The Popular Lectures on Friday 15 July attracted a large, suitably mixed audience to the Royal Institution, with all ages from teenagers upwards well represented. The lecture theatre is of course remarkably beautiful, but it can feel cramped and, on a very hot evening, I was a little apprehensive as to my comfort. I need not have worried: the two lectures were both so enthralling that neither the heat nor the lack of legroom intruded on my consciousness at all during the evening. The two talks were very different. Alan

Slomson told us What Computers Cannot Do. Eschewing digital display equipment in favour of the overhead projector, he took us through the logic of Unlimited Register Machines (which are similar to Turing Machines), proving (in full) that there is no algorithm that can predict in advance whether a given programme will eventually terminate or not. I would not have imagined in advance that it was possible to demonstrate this result to a lav audience in the time available, and Alan's achievement in doing so was remarkable. Alan finished his witty and entertaining talk by mentioning two other problems for which it has been proved that no algorithm can exist: whether or not a given Diophantine equation has a solution and whether or not an expression can be found for the integral of a given expression. This talk was a wonderful demonstration of how to present pure mathematics to a general audience.

After the interval, Joan Lasenby gave a more practical demonstration of the use of mathematics in her talk on *The Mathematics* of *Shrek*. Switching more comfortably between a variety of software applications than I have ever been able to do, she showed us extracts from recent big-budget animations and (presumably smaller-budget) work

by her students and her son, and gave us an idea of the mathematics on which such 3-D transformations depend, from complex numbers to fractals. She also showed what can be done guickly and easily with readily available, cheap software, and offered inside information into how the teams of animators in Hollywood studios work. This is a fast-moving area which draws on many areas of science, from mathematics and engineering to the neuroscience of vision and gait analysis, and it was fascinating to see how necessary all these diverse disciplines are if an animated figure, however convincing as a still image, is to remain realistic when it moves. Again, the audience was fully engaged, and a series of guestions drew further insights from the speaker.

I thought this was a remarkably successful evening. The organisation seemed very smooth: the talks complemented each other beautifully, offering a balance of pure mathematics and applications, rigorous proof and overview, the pleasures of symbolic manipulation and purely visual enjoyment. Such an audience, containing specialists as well as the general public, must be particularly difficult for a speaker. I went with a friend, a visual artist with an interest in film but no mathematics background: she had no trouble at any stage in following both talks, and we were both thoroughly entertained. The lessons for any sixth-former considering a future in mathematics were very positive: we were shown that mathematics is fun and that it offers exciting career possibilities! The programme is to be repeated in Manchester on Wednesday 28 September and will be recorded for subsequent release on DVD (which will be available from the LMS: a useful purchase for school and university maths departments seeking resources that will stimulate their students).

> Tony Mann Greenwich University

LONDON MATHEMATICAL SOCIETY

POPULAR LECTURES 2005

Manchester University – Wednesday 28 September

Dr Joan Lasenby

The Mathematics of Shrek

'How does mathematics, coupled with immense computational power, produce the stunning visual effects in movies like Shrek and Toy Story?'





Dr Alan Slomson

What Computers Cannot Do

'Computers can solve many mathematical problems. But, no matter how powerful they become, mathematics tells us there are limits to their problem-solving ability.'

MANCHESTER (Rutherford Theatre, Schuster Building, Brunswick Street) Commences at 6.30 pm, refreshments at 7.30 pm, ends at 9.00 pm. Admission is free. Enquiries to Catherine Fox, Department of Mathematics, University of Manchester, Oxford Road, Manchester M13 9PL (tel: 0161 306 4013, email: catherine.fox@manchester.ac.uk).

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

FIRST-PASSAGE AND EXTREME VALUE PROBLEMS IN RANDOM PROCESSES

6 – 30 June 2006

Supported by the European Commission, Sixth Framework Programme Marie Curie Conferences and Training Courses - MSCF-CT-2004-516558

in association with the Newton Institute programme entitled Principles of the Dynamics of Non-Equilibrium Systems (9 January to 30 June 2006)

Organisers: Claude Godrèche (Saclay), Satya Majumdar (Orsay), Sid Redner (Boston).

Theme of conference: The conference will focus on fundamental issues of first-passage processes and extreme value statistics and their applications, and on related non-equilibrium statistical mechanical processes. This conference will help develop the connection between fundamental theory and phenomenology by bringing together probability theorists, mathematicians, and physicists to stimulate new collaborations and research initiatives.

Invited Lecturers: D. Astumian, D. ben-Avraham, O. Benichou, G. Ben Arous, E. Ben-Naim, J.P. Bouchaud, M. Bramson, A.J. Bray, C. van den Broeck, T. Burkhardt, A. Comtet, C. Dasgupta, D.S. Dean, C. Godrèche, M.J. Kearney, J. Klafter, P.L. Krapivsky, K. Lindenberg, S.N. Majumdar, J. Masoliver, Z. Racz, S. Redner.

Location and cost: The conference will take place at the Newton Institute and accommodation for participants will be provided in single study bedrooms with shared bathroom at Wolfson Court. The conference package, costing £485, includes accommodation, breakfast and dinner from dinner on Sunday 25 to breakfast on Saturday 1 July, and lunch and refreshments during the days that lectures take place. Substantial financial support is available for EU research students and post doctoral researchers with fewer than ten years research experience. Participants who wish to attend but do not require the Conference Package will be charged a registration fee of £40. Self-supporting participants are very welcome to apply.

Further information and application forms are available from the web at: www.newton.cam.ac.uk/programmes/PDS/pdsw03.html. Completed application forms should be sent to Tracey Andrew, Programme & Conference Secretary, Isaac Newton Institute, 20 Clarkson Road, Cambridge CB3 0EH or via email (t.andrew@newton.cam.ac.uk).

Closing date for the receipt of applications is 28 February 2006.

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/meetings/calendar.html).

SEPTEMBER 2005

1-3 British Logic Colloquium, Bristol University (340) 5 LMS South West & South Wales Regional Meeting, Bristol (340) 5-6 Heat Transfer Conference, Manchester University (334) 5-7 Mathematics of Surfaces XI, IMA Conference, Loughborough University (330) 9-16 Quadratic Forms, Linear Algebraic Groups Workshop, Nottingham University (340) 11-16 Computational Differential Equations LMS/EPSRC Workshop, Manchester University (339) 12-13 Boundary Integral Methods Conference, Liverpool University (338) 12-14 British Topology Meeting, Bristol University (340) 15-16 Induction Course, Birmingham University (340) 16-18 EMS-SCM Joint Mathematical Weekend, Barcelona University, Spain (336) 16-21 Geometric Representation & Invariant Theory Conference, Belgium (338) **19** Function Theory Meeting, De Morgan House, London (339) 19-22 All Hands Meeting, East Midlands Conference Centre, Nottingham (336) 19-23 Theoretical Aspects of Pattern Formation INI Satellite Meeting, Surrey University (336) 20 Theoretical Aspects of Pattern

Formation Seminar, Surrey University (338) 26-30 Theory & Applications of Coupled Cell Networks Conference, INI, Cambridge (336) 26-30 Annual Meeting of the Australian Mathematical Society, University of Western Australia, Perth (331)
28 LMS Popular Lectures, Manchester University (340)
29-30 Digital Curation Conference, Hilton Bath City (336)

OCTOBER 2005

3-4 Metric Number Theory and Its
Applications, York University (340)
5 Conference in Honour of Tom Willmore, Durham University (340)
5 Who Invented Algebra? Gresham
College, London (340)
7 LMS Algorithms Meeting, London (340)
7-8 Euclid and his Heritage Conference, Oxford University (339)
26 Who Invented the Equals Sign?
Gresham College, London (340)
26-29 Sixth Century Conference in Representation Theory, Aberdeen University (340)

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NOVEMBER 2005

3 History from below: Mathematics, Instruments and Archaeology, Gresham College, London (340)
7 Einstein and Beyond, LMS Spitalfields Day, INI, Cambridge (340)
16 Who Invented the Calculus? Gresham College, London (340)
18 LMS Annual General Meeting, London
19 Belfast Functional Analysis Day, QUB (337)
22-26 Kingfisher DELTA 05, Fraser Island, Australia (336)
24-1 Dec Reform, Revolution & Paradigm Shifts in Mathematics Education, Malaysia (338)
27-30 LUMS International Conference on

Mathematics, Lahore, Pakistan (339)

DECEMBER 2005

7-19 International Symposium on Recent Advances in Mathematics and its Applications, Calcutta, India (340)

KURT MAHLER DE MORGAN MEDALLIST 1971



Extract from the President's address: that are not only deep, general and beautiful, 'Professor Mahler's contributions to the theory of numbers are truly amazing. He has many extremely useful in other branches of number deep general results in the theory of transcendental numbers. Mahler has also discovered critical lattices, on transfer theorems, on

but which have also been found to be theory. Instances of these are his work on many theorems in the geometry of numbers *p*-adic analogues and on compound bodies.'