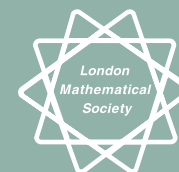


THE LONDON MATHEMATICAL SOCIETY



NEWSLETTER

No. 327 June 2004

Forthcoming Society Meetings

2004

**Friday 18 June
London**

J. Rickard
T. Tao
(Hardy Lecture)
[page 3]

**Wednesday 30 June
4ECM, Stockholm**

Meeting and
Reception
[page 6]

**Friday 2 July
Newcastle**

Northern Regional
Meeting
M. Gromov
R.I. Grigorchuk
[page 6]

**Friday 17 September
Exeter**

South West & South
Wales Regional
Meeting
R. Langlands
G. Henniart

**Friday 19 November
London**

AGM
D. Olive
P. Goddard

INTERNATIONAL REVIEW OF MATHEMATICS

The report of the International Review of Mathematics has now been published – copies are available from the Society (perera@lms.ac.uk) or it can be downloaded in pdf from the CMS website (www.cms.ac.uk/irm).

The report was the subject of presentations during April to HoDoMS, BMC, BAMC and CPAM. The main opportunity for debate, however, was the Community Meeting on 4 May, at University College London, chaired by Martin Taylor, chair of the International Review Steering Group.

Jean-Pierre Bourguignon, chair of the International Panel, gave a comprehensive overview of his Panel's conclusions and recommendations, explaining the basis for the conclusions and the evidence on which they were based. He responded to questions from the floor, and thanked the whole UK mathematics and statistics community for the help it had given to his Panel in its work, not least through the eight regional meetings. These had been enormously valuable to the Panel, particularly the opportunity to meet and talk to younger researchers.

John O'Reilly for EPSRC and Frances Kirwan for the CMS commented on the Report and the importance of the issues raised by it. Both welcomed the discussions later in the day to gather the views and reactions of the UK community to assist their organisations in developing plans to address the issues in the Report.

After lunch the meeting broke into four groups, each with a specific remit: entry and training up to PhD; academic careers; 'core' mathematics, interdisciplinarity and connectivity; and research strengths and weaknesses. Following feedback from the four rapporteurs and comments from all the earlier speakers, Martin Taylor wound up the meeting. The UK mathematics community owed Jean-Pierre and his panel a great debt of gratitude. The report provided a very solid, independent view of UK mathematics and statistics research, and most crucially potential threats to its future health. The funding bodies, learned societies and community must now work closely together to develop ways of addressing those issues and of ensuring that the strengths of UK research in mathematics and statistics were used to their full.

A report on the Community Meeting will be made available via the CMS website (www.cms.ac.uk/irm).

We are still keen to gather comments and views on the Review. These can be sent to irm@lms.ac.uk.

Peter Cooper
Executive Secretary, LMS
and current Secretary, CMS

LONG ARITHMETIC PROGRESSIONS IN THE PRIMES

The Hardy Fellow, Professor Tao, has kindly offered to extend his original list of lecture topics to include one on his very interesting recent discovery that the prime numbers contain arithmetic progressions of length k for all k . Council decided that this was too good an opportunity to miss, and has accordingly changed the title of the Hardy Lecture on 18 June to *Long arithmetic progressions in the primes*.

Professor Tao will also be lecturing in Cambridge on 16 June, on the following:

The nonlinear Fourier transform The linear Fourier transform can be used to analyze functions which take values in a vector space.

If, however, the function takes values in a non-abelian group, then one must instead use the non-linear Fourier transform (also known as the scattering transform), which is used in the theory of integrable PDE, the spectral theory of differential operators (or Jacobi matrices), the theory of orthogonal polynomials, of Gaussian processes, inverse scattering theory, Riemann-Hilbert problems, etc. In this talk we discuss this transform and its surprisingly strong analogy with the linear Fourier transform, and discuss some recent results.

The Keakeya problem and arithmetic combinatorics Define a Besicovitch set to be a subset of \mathbb{R}^n which contains a unit line segment in every direction. The Keakeya conjecture asserts that such sets always have Hausdorff dimension n ; this conjecture has been proven in two dimensions but one only has partial results in higher dimensions. This problem turns out to have important connections to harmonic analysis, PDE, and even algebraic geometry and the combinatorics of sum sets. We will survey these connections and describe some recent results.

For further details contact T. Körner (t.w.korner@dpmms.cam.ac.uk).

LONDON MATHEMATICAL SOCIETY

Friday 18 June 2004

J.C. Rickard (Bristol University)
Senior Berwick Prizewinner 2002

will speak at 3.30 pm on

*The stable module category
of a finite group algebra*

T. Tao (UCLA)

will give the Hardy Lecture at 5.00 pm on

Long arithmetic progressions in the primes

The meeting will be held at the Chemistry Auditorium, Christopher Ingold Building, University College London, 20 Gordon Street, London WC1. Tea will be served at 4.30 pm.

A dinner will be held at the Bloomsbury Park Hotel, Southampton Row, London WC1 at 7.30 pm. The cost will be £26.00 per person, inclusive of wine, and a reception at De Morgan House beforehand. Those wishing to attend should inform Susan Oakes, the Administrator at the Society, enclosing a cheque payable to the 'London Mathematical Society' to arrive no later than **Tuesday 15 June**.

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

LMS Newsletter

General Editor: Dr D.R.J. Chillingworth (D.R.J.Chillingworth@maths.soton.ac.uk)

Reports Editor: Dr S.A. Huggett (s.huggett@plymouth.ac.uk)

Reviews Editor: Professor M.P.F. du Sautoy (dusautoy@maths.ox.ac.uk)

Administrative Editor: Miss S.M. Oakes (oakes@lms.ac.uk)

Editorial office address: London Mathematical Society, De Morgan House,
57-58 Russell Square, London WC1B 4HS (tel: 020 7637 3686; fax: 020 7323 3655;
email: oakes@lms.ac.uk, web: www.lms.ac.uk)

Designed by CHP Design (tel: 020 7240 0466, email: info@chpdesign.com, web: www.chpdesign.com)

Publication dates and deadlines: published monthly, except August.

Items and advertisements by first day of the month prior to publication.

Information in the *Newsletter* is free to be used elsewhere unless otherwise stated; attribution is requested when reproducing whole articles. The LMS cannot accept responsibility for the accuracy of information in the *Newsletter*. Views expressed do not necessarily represent the views or policy of the London Mathematical Society.

Charity registration number: 252660.

HUGH CHRISTOPHER LONGUET-HIGGINS

Professor Christopher Longuet-Higgins, FRS, died on 27 March 2004, aged 80. He began his career in theoretical chemistry but in 1967 he moved into the computer field of artificial intelligence. He was one of the founders of the Department of Machine Intelligence and Perception at Edinburgh. He moved to Sussex University in 1974 and from 1984 to 1986 he was Director of the Institute of Cognitive and Information Sciences there. Professor Longuet-Higgins was awarded the Society's Naylor Prize in 1981.

PETER LOCKETT

Dr Peter Lockett, who was elected a member of the London Mathematical Society on 19 October 1972, died very suddenly on 9 April 2004, aged 57. He had been on a skiing holiday the previous week. After graduating from Cambridge, Peter became a research student of Trevor Hawkes at Warwick University in 1968. After that he had a post at the University of East Anglia before moving to the Lanchester Polytechnic (now Coventry University) in 1973 and remaining there for the rest of his life. His thesis was some ground-breaking work in the theory of Fitting classes of finite groups and he gave his name to 'Lockett Sections' and 'Lockett Classes' which have been fruitful subjects for research ever since. At Coventry he turned his attention to applied mathematics problems as diverse as Formula 1 racing-car camshafts and the effect of continental shelf slip Tsunamis on Devonport Dockyard. He was always sure 'it is not as difficult as it looks'. Peter was a man of wide interests including motor-racing (he drove his Mondeo Cosworth regularly at Donnington), badminton, and hiking. He will be much missed as a valued teacher and colleague.

DAVID H. FOWLER

Dr David Herbert Fowler, who was elected a member of the London Mathematical Society on 15 June 1979, died on 13 April 2004, aged 67. He graduated from Cambridge after completing the Tripos in 1959. He began his academic career at the University of Manchester in 1961 before moving to Warwick in 1967 as a Lecturer and to manage the Mathematics Research Centre until 1990. David was one of the 20th century's most innovative and stimulating historians of mathematics. With his lucid and engaging book *The Mathematics of Plato's Academy* (OUP 1987, 2nd, rev. ed. 1999) he fundamentally rewrote the history of early Greek mathematics. In it he argued that the discovery of incommensurability did not provoke the crisis that led to the de-arithmetised tradition embodied by Euclid's *Elements*. Rather, he claimed, the *Elements* were the culmination of a mathematical culture that was deeply engaged with ideas of ratio and proportion. The idea of the dialogue between Socrates and slaveboy, teacher and student, ran deep not only in his historical writing but also in his undergraduate mathematics teaching at the University of Warwick. His acute powers of observation and pleasure in stimulating, thought-provoking discussion won him many friends and admirers in the history of mathematics community worldwide. He was awarded a DSc of the University of Warwick in 1999 by submission of published papers. After his retirement in 2000 he was appointed an Emeritus Reader by the University.

HENRY L.S. ORDE

Mr Henry L.S. Orde, who was elected a member of the London Mathematical Society on 17 October 1980, died on 3 March 2004, aged 82.

The Vast World of *Mathematics*

<p>L. Russo, S. Levy The Forgotten Revolution How Science Was Born in 300 BC and Why it Had to Be Reborn</p> <p><i>From the reviews: "The book is among a handful of truly marvellously written books in the field of early science ... and it was accordingly a great success with the Italian public. The community of historians of mathematics should be grateful to Russo for this achievement, and should hope that the book gets quickly translated into other major languages."</i></p> <p style="text-align: right;"><i>Reviel Netz, classicist, Stanford University</i></p> <p>2004. III, 487 p. Hardcover € 89.95; sh 152.50 € 68.00 ISBN 3-540-20868-1</p> <p>Also available in softcover € 28.95; sh 54.50; £ 18.50 ISBN 3-540-30396</p>	<p>M. Georgiadou Constantin Carathéodory Mathematics and Politics in Turbulent Times</p> <p><i>In a thought-provoking approach, Maria Georgiadou devotes to Constantin Carathéodory all the attention such a personality deserves. With breathtaking detail and the appropriate scrutiny she elucidates his oeuvre, life and turbulent political and historical surroundings.</i></p> <p>2004. XXIII, 611 p. 87 illus. Hardcover € 88.95; sh 152.50; £ 65.00 ISBN 3-540-44258-8</p> <p>Also in preparation in softcover € 38.95; sh 73.00; £ 38.50 ISBN 3-540-20312-4</p>	<p>M. Emmer, M. Manaresi (Eds.) Mathematics, Art, Technology and Cinema</p> <p><i>From the reviews of the Italian edition: "Michele Emmer ... has again organized a collection of extremely inspired (and inspiring!) articles for the Springer series "Mathematics and Culture". [...] Again, the outcome is a book containing various essays on the interconnections between mathematics, philosophy, technology, and fine arts, [...]"</i></p> <p style="text-align: right;"><i>Mirjam Appel, Zentralblatt für Mathematik und ihre Grenzgebiete</i></p> <p>2003. XII, 242 p. Hardcover € 79.95; sh 135.50; £ 61.50 ISBN 3-540-08607-8</p>
<p>Yellow Sale 2004 March 1 - July 31, 2004 Great Books! Great Prices! springeronline.com/yellowsale</p>		
<p>Please order from Springer - Customer Service Haberstr. 7 69126 Heidelberg, Germany Tel.: +49 (0) 6221 - 345 - 0 Fax: +49 (0) 6221 - 345 - 4229 e-mail: orders@springer.de or through your bookseller</p>	<p>M. Aigner, G.M. Ziegler Proofs from THE BOOK</p> <p><i>From the reviews: "... Inside PFTB is indeed a glimpse of mathematical heaven, where clever insights and beautiful ideas combine in astonishing and glorious ways. There is vast wealth within its pages, one gem after another. Some of the proofs are classics, but many are new and brilliant proofs of classical results. ..."</i></p> <p style="text-align: right;"><i>Notices of the AMS, August 1999</i></p> <p>3rd ed. 2003. VIII, 239 p. 258 illus. Hardcover € 28.95; sh 54.50; £ 23.00 ISBN 3-540-40460-0</p>	<p>M. Emmer (Ed.) Mathematics and Culture I</p> <p>2004. VIII, 552 p. Hardcover € 49.95; sh 88.50; £ 38.50 ISBN 3-540-00719-4</p> <p style="text-align: right;">springeronline.com</p> <div style="text-align: right;"> Springer </div>

All Euro and GBP prices are net prices subject to local VAT, eg. in Germany 7% VAT for books and 16% VAT for electronic products. Prices and other details are subject to change without notice. 48p - 09/04

LONDON MATHEMATICAL SOCIETY NORTHERN REGIONAL MEETING

University of Newcastle, Friday 2 July 2004

Professor M. Gromov (IHES/Courant Institute)
Separation in groups and L_2 Kähler geometry

Professor R. Grigorchuk (Steklov Institute/Texas A&M)
Groups, finite automata and spectra

There will be a conference dinner following the meeting.

The meeting will be preceded by a workshop on *Geometric Group Theory*, with emphasis on formal languages, logic and equations, from Tuesday 29 June to Thursday 1 July. There is a £15 registration fee for the workshop. Visit the website www.mas.ncl.ac.uk/~najd2/lmsnorth/ to register and for further information, or contact the conference organisers (email: lms.north@ncl.ac.uk or fax: +44-191 222 8020).

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 2 July. 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).

FOURTH EUROPEAN CONGRESS OF MATHEMATICS LMS Meeting & Reception

The London Mathematical Society will be holding a Meeting and Reception for its members during the Fourth European Congress of Mathematics (4ECM) at 6.00 pm on Wednesday 30 June. Members who wish to attend should apply for their free ticket to Susan Oakes, the Administrator at the Society (oakes@lms.ac.uk), no later than **Friday 11 June**. The Society hopes to entertain as many as possible of its members who are attending the European Congress.

WOLFSON RESEARCH MERIT AWARDS

The Royal Society invites nominations (via Vice-Chancellors and Principals) for the Royal Society-Wolfson Research Merit Award Scheme. The primary aim of this scheme is to provide universities with additional support to enable them to attract to this country, or keep here, respected scientists of outstanding achievement and potential.

The awards typically consist of an amount of £40,000 per annum for five years primarily for salary enhancement (although requests for technical/secretarial help or support for

items not suitable for research grant applications will also be considered as a minor component of the funding). The awards are funded jointly by the Wolfson Foundation and the Office of Science and Technology and support researchers in any of the sciences within the OST remit. Applications from candidates themselves will not be accepted.

Criteria for the award will include:

- the research record or promise of the nominee
- the contribution that the nominee can make to the furtherance of UK research in the nominee's field
- the record and promise of the university in the nominee's field of research
- the quality of laboratory and other facilities which the university intends to make available to the nominee to undertake research
- the nominee's expected contribution to promoting and disseminating research at the university and more widely, including the balance between research, teaching and any other duties and the university's commitment to his or her longer-term and broader career development.

Nominees, who may be of any nationality, must either currently hold a permanent post (wholly funded by the nominating university) or have received a firm offer to take effect from the start of the award. Successful nominees will normally hold the award for five years and it will be the responsibility of the host university to pay the basic salary including employer's contribution for pension and National Insurance for the basic salary and the employer's contribution for pension and National Insurance for the merit award salary enhancement.

Nomination details are available from the Royal Society's website. Nominations may be submitted at any time (marked for the attention of Dr Lynn Turner) and, whenever possible, a definitive response will be given within three or four months of receipt. Queries should be addressed to the Manager,

Research Appointments, The Royal Society, 6-9 Carlton House Terrace, London SW1Y 5AG (email: ukresearch.appointment@royalsoc.ac.uk).

CROSS-DISCIPLINARY FELLOWSHIPS FROM THE HUMAN FRONTIER SCIENCE PROGRAM

Over the last few years, the Human Frontier Science Program has increasingly emphasised the collaboration between scientists in different disciplines in its grant and post-doctoral fellowship programs. Involvement in the grant program by scientists working in disciplines outside the life sciences has increased seven-fold since 2001. More applications have also been received for postdoctoral fellowships from young scientists trained in the physical sciences, who are seeking training in the life sciences in laboratories abroad, but the change has not been as dramatic as in the grants. HFSP is especially committed to bringing new conceptual and methodological approaches from other disciplines into biology and young scientists will play an important role in this transformation. A special fellowship program for such scientists is therefore being introduced. The new Cross-Disciplinary Fellowships will be introduced starting with the application deadline in September 2004. The first awards will be announced in March 2005.

The conditions for these fellowships are the same as those of the current Long-term Fellowships. This three year postdoctoral package for training abroad is particularly attractive owing to its flexibility and the chances it offers young scientists in the critical period during their move to independence. Fellows can either remain in their host laboratories for the three years of the fellowship, or they can take the third year in a laboratory back in their home countries. The

return home may be deferred for up to two years if the host is prepared to support the Fellow from other sources. Those who return home are eligible to apply for a Career Development Award to help them start up their own independent laboratories.

More details are available on the HFSP website at www.hfsp.org.

Deadlines:

26 August 2004: pre-registration on website (compulsory)

2 September 2004: submission of applications for pre-registered applicants.

EPSRC MATHEMATICS PROGRAMME STRATEGIC ADVISORY TEAM

The Maths SAT met for the fifth time on 16 March at Polaris House, Swindon.

2004 is an assurance year in EPSRC's biennial business planning cycle. The main purpose of programme assurance is to provide an update on the progress of the Programme in achieving its objectives and to raise with TOP and UP any issues which are affecting the Programme. This meeting of the SAT focused on programme assurance, looking in particular at EPSRC support for the sub-programmes of pure mathematics, applied mathematics, statistics and operational research.

Each of the Mathematical Sciences Associate Programme Managers gave a brief presentation covering the key aspects of their sub-programmes, based primarily upon data about EPSRC-funded grants current in a snap-shot taken at 1 December 2003. The sub-programme reviews also contained information about trends in expenditure since 1999 and IGR ratings for completed grants over the last 3 years. Following each presentation the SAT members discussed each sub-programme; and finalised a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis for EPSRC's support of that

topic. The sub-programme reviews, together with the SWOT analyses and the comments made by the SAT, will be major inputs for an overarching Programme level review which will be developed for discussion with the SAT in May. The Programme Review document will provide a primarily factual view of the Programme and how it is evolving for TOP and UP and will be publicly available in due course.

Following its look at EPSRC's support for research in the Mathematical Sciences, the SAT then moved on to talk about the International Review of Mathematics and the recently held Review of Operational Research, which look at the broader picture of research in the UK, not just that funded by EPSRC.

The SAT was aware that some of the issues highlighted by the International Review of Mathematics are beyond EPSRC's control, so attention was focused on the issues of post-graduate training, recruitment and retention of researchers (including the needs of mid-career researchers and the effects of retirements), critical mass issues and the interface with computer science. The SAT was extremely keen that EPSRC be seen to act upon the findings of the International Review, in a manner that is clear to the community, and felt that EPSRC should raise the issues in the International Review of Mathematics that are not within its remit with the appropriate bodies. The SAT will return to discuss some of the issues highlighted by the International Review at future meetings, with a view to advising EPSRC on the Programme's future strategy and the development of the 2005 business plan.

The key initial conclusions of the review of Operational Research were then discussed - the SAT was in the fortunate position that although the review had happened only a week previously, one of the review panel members, Roger Forder, is also a member of

the team. The review panel had indicated that it felt that OR research in UK is 'alive and kicking', having world class research groups with novel approaches and a community that is well connected internationally. The panel noted the importance of Masters training in OR and recognised that the UK is in a unique position with respect to healthcare OR. Further detail about the panel's conclusions will follow in the full report in due course.

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

This was the final meeting for Nigel Hitchen, Ursula Martin, Keith Winters, Steve Brooks and David Fearn. I would like to thank them for the role they have played in establishing the Mathematical Sciences SAT and making it a success. Since the SAT was launched in 2002, it has helped EPSRC to

articulate the challenges across the breadth of its remit in the Research Priorities and Opportunities document (www.epsrc.ac.uk), it has advised on the strategy for the Programme for 2004-06 and the articulation of this strategy, which has resulted in further increases to the Programme budget (£13.4m in 2004-05), and it has been the driving force behind recent changes to the EPSRC fellowship rules to allow fellows to use their fellowship support fund for exceptional childcare costs incurred, for example, because the fellow needs to attend a workshop or conference overseas. The next meeting was held on 12 May 2004 and Gareth Roberts (Lancaster), Hilary Ockendon (Oxford), Cliff Cocks (GCHQ), Andy Wright (BAe Systems) and John Greenlees (Sheffield) were welcomed to the team.

Dr Annette Bramley
EPSRC Programme Manager,
Mathematical Sciences



UNIVERSITY OF
OXFORD

Professorship of Mathematical Biology

Applications are invited for the above new professorship, tenable from 1st January 2005, or such later date as may be arranged. A non-stipendiary fellowship at St John's College is attached to the professorship.

The Professorship of Mathematical Biology is a new chair to be held in the Mathematical Institute at Oxford. The University seeks to appoint a scientist of international distinction who will encourage the pursuit of excellence in this rapidly expanding field through teaching and through his or her own research. It is expected that the new professor will stimulate new interactions between Mathematics and the Biological and Medical Science departments at Oxford University. Candidates should have a research record at the highest international level.

Further particulars, including details of how to apply, are available from <http://www.admin.ox.ac.uk/fp/> or from the Registrar, University Offices, Wellington Square, Oxford OX1 2JD, tel. (44) (0)1865 270200. The closing date for applications is 5th July 2004.

The University is an Equal Opportunities Employer.

VISITORS TO THE UK

E. DOKTOROV

Professor Evgeny Doktorov (B.I. Stepanov Institute of Physics, Minsk, Belarus) will be visiting the UK from 7-24 July. Professor Doktorov is a well-known expert in the field of Solitons (in particular, Inverse Scattering, Nonlinear Optics) and their applications. During his stay, he will give lectures at Queen Mary, University of London, at Aston University and at the University of Glasgow. His visit is partly supported by an LMS Scheme 2 grant. For more information contact Dr V.M. Rothos, School of Mathematical Sciences, Queen Mary, University of London (V.M.Rothos@qmul.ac.uk).

M. FECKAN

Professor M. Feckan (Comenius University, Bratislava, Slovakia) will be visiting the UK from 4-16 July. Professor Feckan is a well-known expert in the field of ODEs (in particular, Dynamical Systems and Chaos) and their applications. During his stay, he will give lectures at Queen Mary, University of London, at the University of Surrey and at the University of Bristol. His visit is partly supported by an LMS Scheme 2 grant. For more information contact Dr V.M. Rothos, School of Mathematical Sciences, Queen Mary, University of London (V.M.Rothos@qmul.ac.uk).

M. KOROVINA

Dr Margarita Korovina (Novosibirsk University) will be visiting the UK for a month from 14 June supported by a Scheme 2 LMS grant. She will be giving lectures at Universities of Bath, Oxford and Manchester on recent developments in definability and computability over continuous data types. For further details contact Nicolai Vorobjov (nnv@cs.bath.ac.uk).

Y. KOZITSKY

Professor Yuri Kozitsky (University of Lublin, Poland) will be visiting the UK from 2 - 16 June. Professor Kozitsky is a well-known expert in the field of Gibbs states (in particular, Euclidian Quantum Gibbs States) and their applications. During his stay, he will give lectures at Imperial College London, Nottingham Trent University and Swansea University. His visit is partly supported by an LMS Scheme 2 grant. For more information contact Dr A. Daletskii, School of Computing and Technology, Nottingham Trent University (alexei.daletskii@ntu.ac.uk).

V. RETAKH

Professor V. Retakh (Rutgers University, USA) will be visiting the UK from 19 June to 17 July. The LMS will support his visit by a Scheme 2 grant. Professor Retakh will give lectures at the Universities of Leeds, York and Warwick on 21 June, 30 June and 9 July respectively. For further information about the visit of Professor Retakh please contact M. Nazarov (mln1@york.ac.uk) or D. Rumynin (rumynin@maths.warwick.ac.uk).

L. SALOFF-COSTE

Professor Laurent Saloff-Coste (Cornell) is visiting Imperial College London from 27 May to 12 June. His visit is supported by a Scheme 2 LMS grant and by an EPSRC visiting grant. He will give seminars at Oxford (7 June), Cambridge (8 June), and University College London (10 June). For further details contact Alexander Grigor'yan (a.grigoryan@ic.ac.uk).

LONDON MATHEMATICAL SOCIETY

in association with the International Centre for Mathematical Sciences

Spitalfields Day

Saturday 10 July 2004,

William Robertson Building, George Square, Edinburgh

Organisers: A. Baker (Glasgow), A.A. Ivanov (Imperial College), J. Lepowsky (Rutgers), J. McKay (Concordia), V. Nikulin (Liverpool) and M. Tuite (Galway)

- | | |
|---------------|--|
| 11:00 – 11:30 | Coffee |
| 11:30 – 12:30 | Robert Wilson (Rutgers University)
<i>Explaining the Moonshine recursions:
vertex algebras and free Lie algebras</i> |
| 12:30 – 13:30 | Lunch |
| 13:30 – 14:30 | Geoff Mason (University of California at Santa Cruz)
<i>Vertex operators and arithmetic: how a single photon
illuminates number theory</i> |
| 14:30 – 15:30 | John Conway (Princeton University)
<i>(title to be announced)</i> |
| 15:30 – 16:00 | Tea |

The London Mathematical Society Spitalfields Days are an opportunity for recent developments in specialist topics to be made known to the general mathematical community. This Spitalfields Day reviews the development of the Moonshine Conjectures, vertex algebras and related areas over the past quarter century. The lectures are linked to the ICMS Workshop on *Moonshine Conjectures and Vertex Algebras* (5-13 July 2004).

Anyone interested is welcome to attend the Spitalfields Day; talks will be aimed at a general mathematical audience. Please let ICMS know by Monday 28 June if you intend to come, to help us plan for lunch (email: icms@maths.ed.ac.uk; tel 0131 220 1777; fax 0131 220 1053). There are limited funds available to support the attendance of research students. These funds should be applied for by email by **28 June**.

Journals at de Gruyter

■ Advances in Geometry

Managing Editors: Theo Grundhöfer, Würzburg; Karl Strambach, Erlangen

ISSN 1615-715X

2004. Volume 4 (4 issues).
Approx. 400 pages

Subscription price print:
€ 228,- / US\$ 228.00*

■ Journal für die reine und angewandte Mathematik (Crelle's Journal)

Managing Editor: R. Weissauer

Editors: J. Cuntz, S. Donaldson, G. Huisken, Y. I. Manin, E. Viehweg, P. Vojta

ISSN 0075-4102

2004. Volumes 566-577.
Approx. 2900 pages.

Subscription price print:
€ 2248,- / US\$ 2450.00*

Test a free online sample copy at
www.degruyter.com

**W
DE
G**
de Gruyter
Berlin · New York

■ Forum Mathematicum

Editors: M. Brin, F. R. Cohen, R. Fintushel, M. Fliess, M. Fukushima, G. Gallavotti, J. Garnier, R. Göbel, J. Lindenstrauss, K.-H. Neeb, J. Noguchi, A. Ranicki, P. Sarnak, D. S. Scott, D. Segal, C. D. Sogge, K. Strambach, H. J. Sussmann, G. Talenti, G. Wüstholtz

ISSN 0933-7741

2004. Volume 16 (six issues).
Approx. 860 pages.

Subscription price print:
€ 448,- / US\$ 448.00*

■ Journal of Group Theory

Managing Editor: John S. Wilson

Editors: A.V. Borovik, M. R. Bridson, M. Broué, F. Buekenhout, F. De Giovanni, R. Göbel, C. K. Gupta, R. Guralnick, A.A. Ivanov, W.M. Kantor, E.I. Khukhro, G. Malle, S.A. Morris, A.YU. Olshanskii, C.W. Parker, D.J.S. Robinson, Y. Segev, A. Shalev, S. Sidki

ISSN 1433-5883

2004. Volume 7 (four issues).
Approx. 480 pages.

Subscription price print:
€ 238,- / US\$ 248.00*

* Includes online edition at no additional costs

Prices are subject to change

WWW.DEGRUYTER.DE

MATHEMATICS

ISAAC NEWTON INSTITUTE

The Isaac Newton Institute for Mathematical Sciences is a national research institute in Cambridge. It aims to bring together mathematical scientists from UK universities and leading experts from overseas for concentrated research on specialised topics in all branches of the mathematical sciences from pure mathematics, applied mathematics, and statistics, to engineering, computer science, theoretical physics and mathematical biology.

At any time there are two visitor programmes in progress, each with about twenty scientists in residence. Included within these programmes are periods of more expanded activity including instructional courses and workshops. Fifty-four programmes have now been completed, the most recent being *Granular and particle-laden flows and Interaction and growth in complex stochastic systems*. The programmes currently taking place are *Random matrix approaches in number theory* and *Statistical mechanics of molecular and cellular biological systems*.

Call for proposals

The Institute now invites new proposals for programmes for 2007 onwards. A choice of six-month or four-month programme is available and short programmes of four weeks duration are invited for July/August each year. These short programmes are intended for more narrowly focused topics or for subjects that may be at an embryonic stage of development and for which a longer programme might not be as yet justified.

Proposals should be addressed to the Director, Sir John Kingman, (Isaac Newton Institute, 20 Clarkson Road, Cambridge CB3 0EH, tel: +44 (0)1223 335999; fax: +44 (0)1223 330 508). Proposers should state whether they would prefer a four-month, six-month or four-week programme. The Institute is pleased to receive proposals at any time. Proposals for consideration at the next meeting of the Scientific Steering Committee (October 2004) should be received by **31 July 2004**.

If you have any queries regarding submission of proposals please do not hesitate to contact the Director. Information is also available at www.newton.cam.ac.uk/callprop.html.

Future programmes 2004

- *Magnetic reconnection theory*, 2-27 August, Organisers: E.R. Priest (St Andrews), J. Birn (Los Alamos), T.G. Forbes (New Hampshire)
- *Quantum information science*, 16 August - 17 December, Organisers: C.H. Bennett (IBM Yorktown), D.P. DiVicenzo (IBM Yorktown), N. Linden (Bristol), S. Popescu (Bristol)
- *Magneto-hydrodynamics of stellar interiors*, 6 September - 17 December, Organisers: D.W. Hughes (Leeds), R. Rosner (Chicago), N.O. Weiss (Cambridge)

2005

- *Model theory and applications to algebra and analysis*, 17 January - 15 July, Organisers: Z. Chatzidakis (Paris), A. Pillay (Illinois), A. Wilkie (Oxford)
- *Developments in quantitative finance*, 24 January - 22 July, Organisers: D. Duffie (Stanford), D. Hobson (Bath), C. Rogers (Cambridge), J. Scheinkman (Princeton)
- *Pattern formation in large domains*, 1 August - 23 December, Organisers: J.H.P. Dawes (Cambridge), P.C. Matthews (Nottingham), A.M. Rucklidge (Leeds), M. Golubitsky (Houston)
- *Global problems in mathematical relativity*, 8 August - 23 December, Organisers: P.T. Chrusciel (Tours), H. Friedrich (Golm), P. Tod (Oxford)

2006

- *Principles of the dynamics of non-equilibrium systems*, 9 January - 30 June, Organisers: M.R. Evans (Edinburgh), S. Franz (ICTP, Trieste), C. Godreche (CEA-Saclay), D. Mukamel (Weizmann Institute)
- *Logic and algorithms*, 16 January - 7 July, Organisers: A. Dawar (Cambridge), M.Y. Vardi (Rice)

- *Spectral theory and partial differential equations*, 17 July - 11 August, Organisers: M. van den Berg (Bristol), B. Helffer (Orsay), A. Laptev (Stockholm), A.V. Sobolev (Sussex)
- *Noncommutative geometry*, 24 June - 22 December, Organisers: A. Connes (IHES), S. Majid (Queen Mary), A. Schwarz (UC Davis)

GRESHAM PROFESSOR OF GEOMETRY

The Council of Gresham College has appointed Professor Robin Wilson as its new Gresham Professor of Geometry.

Professor Wilson is well-known to Gresham College mathematics enthusiasts as he has given a number of lectures on mathematics and its history at Gresham College over the past four years. In response to the demand for such lectures, as Gresham Professor of Geometry, he will take his audiences on a journey through the entire history of mathematics from the earliest times up to the present day.

Professor Wilson's lecture series will begin this autumn and he will deliver six lectures a year for three years. His plan is to devote his three autumn lectures each year to the history of mathematics while other lectures will feature contemporary issues in mathematics.

This coming autumn, he will illustrate a wide range of mathematical activity from Egypt, Mesopotamia, Greece, China, and the Mayan culture of Central America. Other lectures in winter 2005 will focus on some unsolved problems of mathematics.

Professor Wilson succeeds Professor Harold Thimbleby whose Professorship ended in May. Previous Chairs of Geometry have included Henry Briggs (co-inventor of logarithms) and Robert Hooke (inventor of the microscope) in the seventeenth century, and more recently Sir Christopher Zeeman, Professor Ian Stewart and Sir Roger Penrose.

Gresham College, named after Sir Thomas Gresham, is an independent educational institution, governed by a Council with the Lord Mayor

of London as its President. For further details about Professor Wilson's lectures, and for details of other Gresham College lectures and events, visit their website at www.gresham.ac.uk.

EMS SUMMER SCHOOLS

Some time ago, I wrote that the European Mathematical Society had been unsuccessful in its application for Framework 6 support of its summer school programme. No sooner had the article appeared, than Vice-President Luc Lemaire was contacted and told that the project had been promoted from the reserve list. I shall pass over the traumatic hours of form filling and further negotiation familiar to anyone who gets involved in European grants, but in March the EMS received confirmation that the proposed meetings would be supported. In the list below, attentive readers will perceive that not all the events happen in summer, but all bar the Będlewo meeting do count as EMS Summer Schools.

2004

- *Evolution equations and applications*, 4-24 July, Cortona, Italy
- *Analysis on metric measure spaces*, 15-23 July, Będlewo, Poland
- *The statistics of spatio-temporal systems*, 12-19 December, Munich, Germany

2005

- *Applications of braid groups and braid monodromy*, 5-13 February, Eilat, Israel
- *Subdivision schemes in geometric modeling, theory and applications*, 25 June - 2 July, Pontignano, Italy
- *European young statisticians' training camp*, 17-23 July, Oslo, Norway
- *Recent trends of combinatorics in the mathematical context*, 13-23 September, Barcelona, Spain
- *Statistics in genetics and molecular biology*, 25 September - 2 October, Warwick, UK

David Salinger
EMS Publicity Officer

Read Something Different



Cloth \$29.95 £19.95



Cloth \$29.95 £19.95

Radon Transforms and the Rigidity of the Grassmannians

Jacques Gasqui and Hubert Goldschmidt

Annals of Mathematics Studies
Paper \$45.00 £29.95

Entropy

Edited by Andreas Greven, Gerhard Keller, and Gerald Warnecke

Princeton Series in Applied Mathematics
Cloth \$49.50 £46.95

Blow-up Theory for Elliptic PDEs in Riemannian Geometry

Olivier Druet, Emmanuel Hebey, and Frédéric Robert

Mathematical Notes
Paper \$45.00 £29.95

The Structure of Spherical Buildings

Richard M. Weiss

Cloth \$45.00 £29.95

Mathematics in Nature

Modeling Patterns in the Natural World

John A. Adam

Cloth \$39.50 £26.95

Venus in Transit

Eli Maor

New in paperback \$17.95 £11.95

PRINCETON
University Press

(0800) 243407 U.K. • 800-777-4726 U.S.
READ EXCERPTS AT MATH.PUPRESS.PRINCETON.EDU

Centre for Mathematical Biology, University of Oxford

Mathematical Virology

14 –17 June 2004

A satellite workshop in the framework of
the Isaac Newton Institute programme

Statistical Mechanics of Molecular and Cellular Biological Systems

Supported by the London Mathematical Society and the Isaac Newton Institute.

Organisers: Philip Maini (Oxford), Tom McLeish (Leeds), Peter Stockley (Leeds), Reidun Twarock (London).

Theme of the workshop: The focus of the workshop is on mathematical models for vital stages of the viral life cycle. Particular emphasis is placed on the structure and assembly of viral capsids, i.e. shells formed from proteins that protect the viral genome, as well as the packaging of the viral genome inside these capsids. Mathematical models in this area are of strong current interest because they constitute important milestones for a better understanding of viral replication mechanisms and hence ultimately for the design of anti-viral therapeutics.

The aim of the workshop is to bring together mathematicians, biophysicists and biologists in an interdisciplinary workshop. Besides talks and poster presentations, the workshop will schedule discussion groups open to all participants, which will streamline the synergies between the different approaches and help to identify new avenues for future research. We expect that with this structure the meeting will provide new insight and inspiration for experts and newcomers in the field alike, and will strongly encourage research in this timely and topical area of Mathematical Biology.

Plenary speakers: B. Berger (MIT), Ch. Brooks (Scripps, La Jolla), R. Bruinsma (UCLA), P. Carloni (SISSA, Trieste), R. Hendrix (Pittsburgh), J. Hogle (Harvard, Leeds), R. Kerner (Paris), J. King (MIT), D. Marenduzzo (Oxford), A. Maritan (SISSA, Trieste), D. Nelson (Harvard), A. Steven (NIH, Washington), P. Stockley (Leeds), D. Stuart (Oxford), M. Thorpe (Arizona), R. Twarock (London), D. Wales (Cambridge), A. Zlotnick (Oklahoma).

Location and cost: The workshop will take place at the Centre for Mathematical Biology, Mathematical Institute, 24-29 St Giles', Oxford OX1 3LB. In order to register for the workshop, please send an email to R.Twarock@city.ac.uk. Registered participants will receive further information on the programme of the workshop by email at the beginning of June. The registration fee is £45 (£30 for research students) to cover coffee breaks and lunchtime buffets, to be paid in cash upon arrival.

Further information on the workshop can also be obtained from the website of the Isaac Newton Institute (www.newton.cam.ac.uk).

SIMAI VII

The VII Congress of SIMAI (Società Italiana di Matematica Applicata e Industriale) will be held in Venice, Isola di San Servolo, from 20-24 September. The conference will cover a large variety of themes in industrial and applied mathematics and, as in the past, will represent the most important scientific event in this field in Italy.

For further details visit the website www.iac.rm.cnr.it/simai. Please note that some fellowships are available for young researchers and that delegates are welcome to organise minisymposia after due consultation with the organisers.

TRENDS IN GEOMETRY IN MEMORY OF BENIAMINO SEGRE

An international conference on Trends in Geometry, in memory of Beniamino Segre (1903-77), will take place in Rome from 7-9 June 2004.

The following speakers will address the conference:

- Marcel Berger
- Peter J. Cameron
- John H. Conway
- Phillip Griffiths
- Mikhael Gromov
- James W.P. Hirschfeld
- Dieter Jungnickel
- Gábor Korchmáros
- Yuri I. Manin
- Edoardo Sernesi
- Nicholas I. Shepherd-Barron
- Joseph A. Thas
- Gudlaugur Thorbergsson
- Giuseppe Tomassini
- Edoardo Vesentini
- Joseph Zaks.

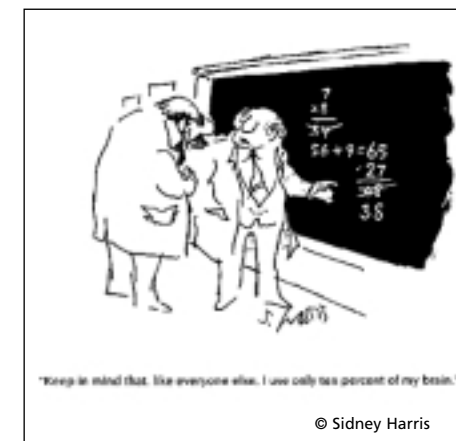
For further information email segre2004@mat.uniroma1.it or visit the website, www.mat.uniroma1.it/segre2004.

25 YEARS OF COMMUNICATING SEQUENTIAL PROCESSES

This event, taking place from 7–8 July at the South Bank University, London, is to commemorate twenty-five years of contributions of Communicating Sequential Processes (CSP) to computer science. CSP originated from research by Sir Tony Hoare, FRS, and has had a profound impact on many areas of computer science, including semantics, logic, parallel programming, distributed systems and hardware compilation. The event is organised by the BCS Specialist Group on Formal Aspects of Computing Science (BCS-FACS). It will consist of invited talks by international experts from industry and academia, a panel discussion, a PhD forum, and tool demos.

The invited speakers are: Sir Tony Hoare, Stephen Brookes, Michael Butler, Sadie Creese, Michael Goldsmith, Jifeng He, Mark Josephs, Jonathan Lawrence, Jeff Magee, Carroll Morgan, David May, Ad Peeters, Jan Peleska, Mike Reed, Bill Roscoe, Peter Ryan, Steve Schneider and Peter Welch.

For further information, including registration forms, visit the website (www.lsbu.ac.uk/menass/csp25).



© Sidney Harris

POSTGRADUATE PURE MATHS IN THE NORTH EAST

The second one-day meeting of Postgraduate Pure Maths in the North East will take place on Monday 28 June at the University of Newcastle-upon-Tyne. All postgraduate students in pure mathematics and related fields are welcome. The main aims of the conference are to give research students in pure mathematics a chance to meet, discuss work and interests (mathematical or otherwise) and gain experience of conference speaking in a relatively informal environment.

The meeting will consist of short talks given by students on their own research or relevant background. In addition, Dr Ian McIntosh (York) has kindly agreed to give a talk as guest speaker. The meeting is supported by an LMS grant. For more information email the organisers, Keith Goda and Yemine Choi, at popmine@ncl.ac.uk or visit the website (www.mas.ncl.ac.uk/~n2721009/PopMiNE/main.html).

THE FASCINATION OF FLUID MECHANICS

A research meeting on the Fascination of Fluid Mechanics is to be held at School of Mathematics, University of Bristol, from 1-2 July. The meeting is to stimulate research in fluid mechanics and associated applied mathematics. It is intended to bring together British and overseas researchers and motivate their interaction through an enthusiastic atmosphere. The meeting also marks the 40 year anniversary of Howell Peregrine at Bristol University.

Speakers will provide stimulating talks showing both the success of mathematics in interpreting fluid phenomena and examples of problems from a range of industrial and environmental applications. The invited speakers are:

- Adam Anderson (Fluent Europe Ltd, Sheffield)
- Mark Cooker (University of East Anglia)
- John Dold (UMIST)
- Leo Franco (Università degli Studi Roma Tre, Italy)

- Jacques Magnaudet (Dynamique des Fluides de Toulouse, France)
- Adrian New (Southampton Oceanography Centre)
- Tim Pedley (DAMTP, Cambridge)
- Rod Rainey (WS Atkins Marine & Offshore Division, London)
- Ron Smith (Loughborough University)
- Peter Stansby (UMIST)
- Costas Synolakis (University of Southern California)
- Andy Woods (BP Institute, Cambridge)

The meeting is supported by an LMS grant. There will be some financial assistance for research students. For further information contact Henrik Bredmose (H.Bredmose@bris.tol.ac.uk) or visit the website (www2.maths.bris.ac.uk/Fascination).

BRITISH LOGIC COLLOQUIUM 2004

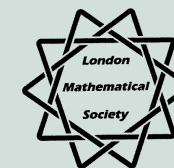
The British Logic Colloquium annual conference for 2004 will be held in the School of Mathematics, University of Leeds, from 2.00 pm on Monday 6 September to 1 pm on Wednesday 8 September. The following have agreed to speak:

- Oliver Deiser (Munich)
- Volker Halbach (Konstanz)
- Lorenz Halbeisen (Belfast)
- Pascal Koiran (Lyon ENS)
- John Longley (Edinburgh)
- Angus Macintyre (Edinburgh)
- Edmund Robinson (Queen Mary, University of London)
- Ulrike Sattler (Manchester)
- Anton Setzer (Swansea)
- Peter Simons (Leeds)
- John Tucker (Swansea)

For further information, or to register, see www.maths.leeds.ac.uk/Pure/logic/blc04.html, or email Dugald Macpherson (h.d.macpherson@leeds.ac.uk). There will be some financial assistance for research students. The meeting is supported by a London Mathematical Society conference grant and by the British Logic Colloquium.

EPSRC

Noncommutative spaces: their topology and measure theory



LMS/EPSRC Short Course

University of Southampton, 6-11 September 2004
Organiser: Jacek Brodzki (Southampton)

Noncommutative geometry treats all algebras, commutative or not, as if they were algebras of functions on spaces. Among the basic tools for the study of these noncommutative spaces is the theory of operator algebras and their invariants. The aim of this course is to provide students with the essential background in the theory of C^* -algebras together with up-to-date applications to the study of topology, measure theory and geometry of noncommutative spaces. This course will take the students from essential notions of K -theory and K -homology of C^* -algebras to some of the most exciting and current research problems. The programme consists of the following lecture courses:

- **The reduced C^* -algebra of a group and the Baum-Connes conjecture** Paul Baum (Penn State)
- **C^* -algebras and their topological invariants** Jacek Brodzki (Southampton)
- **C^* -algebras and the Plancherel theorem for reductive groups** Roger Plymen (Manchester)
- **Introduction to exact C^* -algebras and groups** Simon Wassermann (Glasgow)

More details of the course are available at: <http://www.maths.soton.ac.uk/LMScourse>.

The registration fee is £110. The accommodation costs for all UK-based research students are covered by EPSRC. Participants must pay their own travel costs. EPSRC-supported students can expect that their registration fees and travel costs will be met by their departments from the EPSRC Doctoral Training Account

Application forms may be obtained from Isabelle Robinson, Administrative Officer at the Society (email: robinson@lms.ac.uk, fax: 020 7291 9978) or from the LMS website (www.lms.ac.uk/activities/research_meet_com/short_course/20_form.html).

Numbers will be limited and those interested are advised to make an early application. The closing date for applications is **Monday 5 July**. Completed forms should be returned to the Administrative Officer by email, fax or post (details above).



PRIFYSGOL CYMRU ABERTAWE
UNIVERSITY OF WALES SWANSEA

Department of Computer Science
Chair, Reader, Lecturers and Tutors

The Department of Computer Science is beginning an expansion of its research and teaching programmes.

Applications are invited for posts at these levels: Professor, Reader, Lecturer and Tutor. We seek outstanding individuals with expertise in any field, but preference may be given to candidates who would enhance our research and teaching in our core areas of:

- (i) *Visual Computing (e.g. graphics, vision, multimedia, geometry) or*
- (ii) *Theoretical Computer Science (e.g. logic, semantics, algorithms, formal methods).*

Applicants must have an outstanding personal research programme and record.

The Department is among only 10 Computer Science Departments in the UK to be awarded both an Excellent in the latest national Teaching Quality Assessment and graded 5 in the 2001 Research Assessment Exercise. The Department is thriving and enjoys excellent support from the University.

Informal enquiries about these posts or future opportunities may be directed to Professor John V Tucker, Head of Department on (+44) 01792 295649 email: J.V.Tucker@swansea.ac.uk.

Chair and Reader (Reference L8295)

Further particulars may be obtained, quoting the above reference, from the Personnel Department, University of Wales Swansea, Singleton Park, Swansea, SA2 8PP, tel: (01792) 295136 (24 hours) or at: www.swansea.ac.uk/personnel/vacancies Applications by CV (10 copies), which should include the names and addresses of three referees.

Lecturer (Reference L8296)
Tutor (Reference L8333)

An application form and further details may be obtained, by quoting the above reference, from the Personnel Department, University of Wales Swansea, Singleton Park, Swansea, SA2 8PP, tel: (01792) 295136 (24 hours) or at: www.swansea.ac.uk/personnel/vacancies

All applications should be sent to the Personnel Department, as detailed above, by the closing date, Friday 25 June 2004.

The University of Wales Swansea is an equal opportunities employer aiming for diversity in its workforce.



**PERCY ALEXANDER
MacMAHON'S 150th
BIRTHDAY CELEBRATION**

A celebration to mark the 150th anniversary of Percy Alexander MacMahon's birth will be held at the Open University's Centre for the History of Mathematical Sciences in Milton Keynes, on 23 September.

Speakers at the celebration will be Paul Garcia (Open University), George Andrews (Penn State University), Keith Lloyd (Southampton University) and David Singmaster (South Bank University). The programme will take place from 13.30 to 17.00, with participants given the opportunity to view an exhibition of MacMahon memorabilia.

For further information, contact Paul Garcia, 6 Westgate Terrace, Westgate Street, Long Melford, Suffolk CO10 9DW, or email paul@marybj.cix.co.uk. While there is no charge for attending this event, places are limited.

Percy Alexander MacMahon was President of the London Mathematical Society from 1894-1896, and a De Morgan Medallist in 1923.



Percy Alexander MacMahon

**SHEFFIELD MACHINE
LEARNING WORKSHOP**

The Machine Learning Research Group in the Department of Computer Science at the University of Sheffield is organising a workshop, from 7-10 September, on deterministic and statistical methods in machine learning, with a strong emphasis on mathematical and numerical methods.

Confirmed invited speakers:

- Chris Bishop (Microsoft Research, UK)
- Andrew Blake (Microsoft Research, UK)
- Herve Bourlard (IDIAP, Switzerland)
- Andrzej Cichocki (RIKEN, Japan)
- Michael Elad (Technion, Israel)
- Jerry Eriksson (Umeå, Sweden)
- Zoubin Ghahramani (University College

London, UK)

- Gene Golub (Stanford, USA)
- Josef Kittler (Surrey University, UK)
- David Lowe (Aston University, UK)
- David MacKay (Cambridge University, UK)
- Ian Nabney (Aston University, UK)
- Manfred Opper (Southampton University, UK)
- John Platt (Microsoft Research, USA)
- Stephen Roberts (Oxford University, UK)
- Bernard Schölkopf (Max-Planck-Institut für biologische Kybernetik, Germany)
- Michael Tipping (Microsoft Research, UK)
- Chris Williams (Edinburgh University, UK)

The refereed proceedings of the conference which will be published by Springer in

the series Lecture Notes in Computer Science. The workshop is supported by grants from the EPSRC, the LMS, Sheffield University, and the PASCAL European Network of Excellence.

Registration is available on-line at www.dcs.shef.ac.uk/ml/workshop. For more details, please contact the organisers: Joab Winkler, Mahesan Niranjan and Neil Lawrence, Department of Computer Science, University of Sheffield (mlworkshop@dcs.shef.ac.uk).

GRAHAM WILKS RETIREMENT MEETING

A retirement meeting in honour of Professor Graham Wilks, organised by the Keele Centre for Wave Dynamics and Keele University, will be held at Keele University on 1 July. Professor Wilks retired at the end of December 2003 after a long and distinguished career in applied mathematics. Not only has he made significant contributions in the area of theoretical fluid mechanics since his PhD in 1967, but his work has also had important benefits to the engineering and industrial applied mathematics communities. He has had strong research contacts internationally over many years and maintained an active interaction with engineers in industry. Graham has also been a very significant figure within UK mathematics including serving on the RAE Panel for Applied Mathematics in 2001.

The one-day retirement meeting will be divided broadly into two parts; the first part will concentrate on latest developments in fluid dynamics with emphasis on heat transfer and related phenomena and the second half will offer more general applied mathematics contributions. As well as a lunch, at which a number of informal talks will be given, there will also be a dinner in the evening to follow the academic event.

The speakers are:

- Frank Smith, FRS (UCL)
- David Riley (Nottingham)
- Stephen Wilson (Strathclyde)
- Ellis Cumberbatch (Claremont)
- Derek Ingham (Leeds)
- Norman Riley (East Anglia)
- David Needham (Reading)
- David Abrahams (Manchester)
- David Sloan (Strathclyde)

Registration should be made electronically using the form on the web page: www.keele.ac.uk/depts/ma/wilks/. The registration fee is £10 per person, which will include lunch, plus £22 for delegates wishing to attend the dinner. Payment will be taken on the day. Note that registration is free for postgraduate students, and support may be available for any necessary travel and subsistence costs. Please contact the organisers by email: Andrew J. Willmott, Keele University (a.j.willmott@keele.ac.uk), and I. David Abrahams, University of Manchester (i.d.abrahams@ma.man.ac.uk).

The meeting is supported by an LMS grant.

YORKSHIRE DIFFERENTIAL GEOMETRY DAY

A Yorkshire Differential Geometry Day will be held at the University of York on Wednesday 9 June. The following talks will be given:

- Roger Bielawski (Glasgow) *Kähler metrics on complexified symmetric spaces*
- Fran Burstall (Bath) *Conformal submanifold geometry*
- Simon Salamon (Imperial College) *Reduced holonomy, cones and branes*
- Richard Thomas (Imperial College) *Constant scalar curvature Kähler metrics and stability of algebraic varieties*

Visit the website for further details (www-users.york.ac.uk/~cmw4/ydgd6.html) or email Chris Wood (cmw4@york.ac.uk). The meeting is supported by an LMS Scheme 3 grant.

BOOK REVIEW

The millennium problems: the seven greatest unsolved mathematical puzzles of our time

Keith Devlin, 2002, Basic Books, ISBN 0 465 01729 0, 237 pp, £19.99.

This ambitious book seeks to explain to the interested layman what the seven Millennium problems - the Riemann hypothesis; Yang-Mills theory; P versus NP; the Navier-Stokes equations; the Poincaré conjecture; the Birch-Swinnerton Dyer conjecture; and the Hodge conjecture - are all about.

Such a project may raise eyebrows among mathematicians, who know they themselves have a limited grasp of most of these problems. But the author is well aware of the dangers: *'To read my book, all you need by way of background is a good high school knowledge of mathematics. You will also need sufficient interest in the topic. This second prerequisite is more important than the first ... no matter how hard I tried I could not make this book an easy read.'*

The book contains eight chapters: chapter zero (introducing the overall theme) and one chapter for each problem. The overall treatment is inevitably impressionistic: the true flavour of each problem cannot be conveyed in such a book. Yet the author struggles to bring the interested layman as close to the action as one could reasonably hope. The task may be impossible, yet Devlin does not shirk his commitment to try to explain.

Each problem is exploited in order to teach, or review, some relevant elementary mathematics. This elementary platform is then used as a springboard to move on to the more serious content - trying to remain true to the spirit of the problem while avoiding inaccessible technical subtleties. The intended effect is to convey a sense of wonder and awe rather than detailed clarity. For example, the chapter on the Birch-Swinnerton Dyer conjecture includes a discussion of the structure of the group of rational points of an elliptic curve, the rank of such a group, reduction mod p , and the Hasse-Weil L -

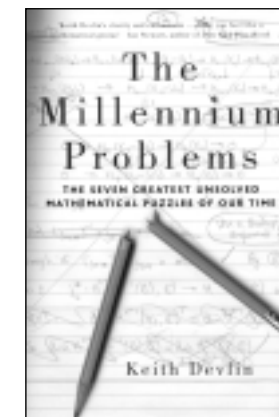
function $L(E,s)$ - all on an elementary level. Devlin knows that the typical reader may understand a few of the easiest ideas here, but will soon be struggling. And he admits it: having explained the relevant terms and why they matter the chapter ends *'...according to the conjecture, the rank of E gives an exact measure of the degree to which $L(E,1) = 0$. So now you know.'*

The author appears to have been well-served by the specialists he consulted on each of the problems. Unfortunately, there is no discussion of the dangers of attaching a price tag to the Millennium problems. Money and mathematics are unnatural bedfellows, and here is a golden opportunity to discuss the issues openly.

In the short term the money provides publicity, as in the public airing of recent work towards solving the Poincaré conjecture. But the advantage may be slight: non-Millennium problems - such as the recent solution by Ben Green and Terry Tao of the Hardy-Littlewood conjecture that the primes contain arbitrarily long arithmetic progressions - also gain significant publicity (*New Scientist*, 8 May 2004). And the drawbacks may be more serious.

Like Hilbert's 23 problems in 1900, the seven 'Millennium problems' look backwards and forwards: they represent central pillars of unfinished business from the previous century, while being chosen because of their potential fruitfulness for future progress.

The criteria for the Millennium problems required that a jury be able to assess whether a particular contribution constitutes a 'solution'. One can imagine problems (e.g. Moonshine) or programmes (e.g.



Grothendieck or Langlands), which at a particular time might have been excluded purely because the relevant infrastructure of language and conjectures had not been sufficiently well organised. If so, then this particular link between mathematics and Mammon may exert a narrowing, conservative influence on development which deserves to be more openly questioned.

Like most popular mathematics books, Devlin's would benefit from being proof-read by a sensitive historian of mathematics, to ensure that 'historical distortions' are deliberate! For example, it is sometimes defensible to write as though the ancient Greeks worked with 'irrational numbers'; but it is more questionable to repeat the canard that their discovery of irrationals came as 'such a shock that their progress in mathematics came to a virtual halt' p.12. And there are many instances where a simple check would eliminate unnecessary errors

(as in giving Gauss' first name as Karl rather than Carl, p.24; or in the claim that Euclid proved the Fundamental Theorem of Arithmetic, p.20; or in the confusing assertion that Euclid showed that, if N is the product of all prime numbers from 2 up to the largest prime P , then $N+1$ must itself be a prime, p.53).

In presenting elementary material, each populariser has his own preferred style. The elementary material in this book is especially important, since it is the only mathematics most readers are likely to really understand. Given the huge effort which the author has expended in making the harder material accessible, the overall impact could be improved by polishing some of this easier material for subsequent editions. Nevertheless, this is a well-constructed popular survey for which the author deserves our thanks.

Tony Gardiner
University of Birmingham

LONDON MATHEMATICAL SOCIETY INVITED LECTURES SERIES

5 – 9 July 2004

Professor M.W. Davis (Ohio State University)
The Geometry and Topology of Coxeter Groups

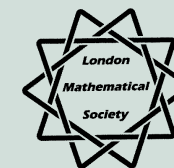
The 2004 LMS Invited Lectures will be given at the School of Mathematics, University of Southampton. The series is held annually: a single speaker gives a course of 10 expository lectures, examining an important topic in depth over a five day period. In the 2004 programme in Southampton there will be two lectures by Professor Davis each morning. In the afternoons a small number of invited lectures on complementary topics will be held (further details will be announced later).

All mathematicians interested in the topic are welcome to attend the lectures. There is a registration fee of £30. Some funding has been made available by the LMS. First priority will be given to supporting the accommodation and travel costs of research students.

For further details, see the webpage for the meeting: www.maths.soton.ac.uk/lms, or contact the organiser Ian Leary (i.j.leary@maths.soton.ac.uk).

EPSRC

Algebraic Groups LMS/EPSRC Short Course



University of Birmingham, 13-17 September 2004
Organiser: G. Röhrle (Birmingham)

Algebraic groups are at the very heart of new and central developments in modern algebra such as quantum groups, p -adic groups, Hecke algebras and geometric representation theory. The aim of this instructional course is to provide an introduction for non-specialists to this wide and classical field. More precisely, the goal is to provide a general understanding of the fundamental methods and results in algebraic group theory, in particular, the structure and representation theories of reductive algebraic groups, their connection with finite groups of Lie type, and Lie algebras.

There will be three courses of lectures:

- **Introduction to algebraic groups and Lie algebras** S. Donkin (London)
- **Root systems, coroots and Weyl groups** R. Lawther (Cambridge)
- **Basics of representation theory of algebraic groups** A. Premet (Manchester)

There will also be three additional special lectures on some more recent aspects of modern development in the theory:

- **Aspects of modular representation theory** J.C. Jantzen (Aarhus)
- **Weyl groups, affine Weyl groups and Hecke algebras** G. Malle (Kassel)
- **Subgroup structure of reductive algebraic groups** M. Liebeck (London)

There will be tutorial support for the three courses. Further details of the programme and a schedule of the talks, as well as information for suggested preparatory reading material, may be found on the web: <http://web.mat.bham.ac.uk/G.E.Roehrle/course04.html>.

The registration fee is £100. The accommodation costs for all UK-based research students are covered by EPSRC. Participants must pay their own travel costs. EPSRC-supported students can expect that their registration fees and travel costs will be met by their department from its EPSRC Doctoral Training Account.

Application forms may be obtained from Isabelle Robinson, the Administrative Officer, at the Society (email: robinson@lms.ac.uk, fax: 020 7323 3655) or from the LMS website (www.lms.ac.uk/activities/research_meet_com/short_course/19_form.html).

Numbers will be limited and those interested are advised to make an early application. The closing date for applications is **Monday 12 July 2004**. Completed forms should be returned to the Administrative Officer by email, fax or post (details above).

LONDON MATHEMATICAL SOCIETY POPULAR LECTURES 2004

Institute of Education, London University
Friday 11 June

Professor Ken Binmore

Big Money Mathematics

'Can mathematics raise billions of pounds? Find out what happens when the mathematics of game theory is applied to economics.'

$$\sqrt{2\pi n} \binom{n}{e} = \text{£}$$



Professor Helen Byrne

A Spoonful of Maths Helps the Medicine Go Down, ...

'What role should mathematics play in the field of medicine? Could it be the new tonic that doctors need to cure our ills?'

Commences at 7.00 pm, refreshments at 8.00 pm, ends at 9.30 pm. Admission is free, with ticket. Apply by 7 June to Miss L. Taylor, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HS (email: taylor@lms.ac.uk). A stamped addressed envelope would be appreciated.

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).

JUNE 2004

- 5 Alan Mathison Turing 2004 Meeting, Manchester University (324)
- 7-9 Trends in Geometry Conference, Italy (327)
- 9 Yorkshire Differential Geometry Day, York University (327)
- 10-17 Representation Theory and Complex Analysis CIME Summer Course, Italy (324)
- 11 LMS Popular Lectures, London (327)
- 14-17 Mathematical Virology Workshop, Oxford University (327)
- 16-18 Croatian Congress of Mathematics, Split University, Croatia (321)
- 18 Hardy Lecture, LMS Meeting, London
- 19-24 Symmetries and Integrability of Difference Equations EURESCO Conference, Helsinki, Finland (323)
- 21-25 Geometry and Visualization Summer School, France (326)
- 21-25 Mathematics for Industry European Conference, Eindhoven, The Netherlands (321)
- 21-29 Nonlinear & Optimal Control Theory CIME Summer Course, Italy (324)
- 21-2 Jul SMS-NATO Advanced Summer Institute Summer School on Morse Theoretic Methods in Non-linear Analysis and Symplectic Topology, Université de Montréal, Canada (322)
- 23 Mathematics Worldwide, J.M. Ball 'David Crighton Lecture', Royal Society, London (326)
- 25-26 Statistical Mechanics Conference, ICMS, Edinburgh (326)
- 27-2 Jul Fourth European Congress of Mathematics, Stockholm, Sweden (326)
- 28 Postgraduate Pure Maths in the North

- East, Newcastle University (327)
- 28-30 Analysing Conflict and its Resolution, IMA Conference, Oxford (319)
- 28-2 Jul Random Matrix Theory and Arithmetic Aspects of Quantum Chaos Conference, INI, Cambridge (323)
- 29-1 Jul Geometric Group Theory Workshop, Newcastle University (327)
- 30-2 Jul Mathematical Knowledge Conference, Cambridge (323)
- 30 LMS Meeting and Reception, 4ECM, Stockholm, Sweden (327)

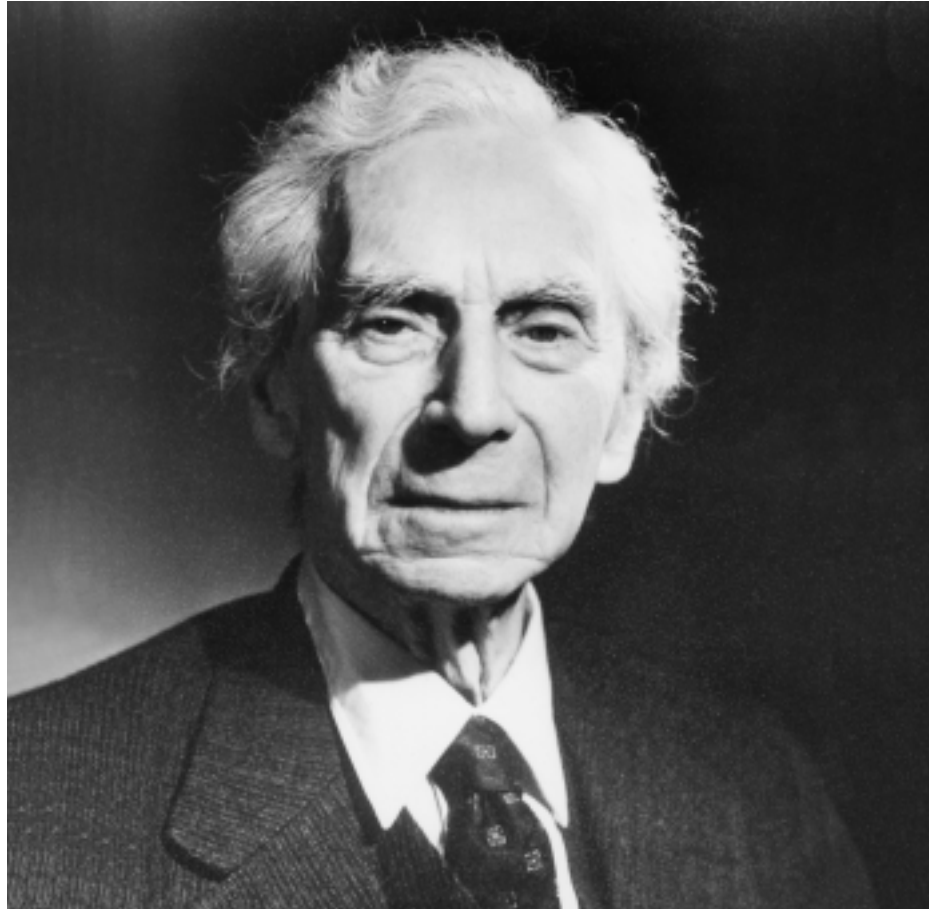
JULY 2004

- 1 Professor Graham Wilks Retirement Meeting, Keele University (327)
- 1-2 Fascination of Fluid Mechanics, Bristol University (327)
- 2 LMS Northern Regional Meeting, Newcastle University (327)
- 4-11 ICME10, Copenhagen, Denmark (308)
- 4-14 Moonshine Conjectures and Vertex Algebras Workshop, Edinburgh (324)
- 5-9 Geometry and Topology of Coxeter Groups, M.W. Davis, LMS Invited Lectures, Southampton University (326)
- 7-8 25 Years of Communicating Sequential Processes, South Bank University (327)
- 9 Scalar Mixing in Fluid Flows and Mappings Meeting, Exeter University (326)
- 10 LMS Spitalfields Day, Edinburgh (327)
- 11-17 Real Analysis and Measure Theory Meeting, Italy (323)
- 12-16 Matrix Ensembles and L-functions Workshop, INI, Cambridge (323)
- 12-16 IWOTA, Newcastle University (325)
- 23-29 International Mathematics Competition for University Students, Skopje, Macedonia (326)
- 23-30 Operator Algebras and Random Matrices Workshop, Cumbria (324)

AUGUST 2004

- 5-7 Discrete Groups and Hyperbolic Manifolds Conference, Aberdeen University (326)

BERTRAND ARTHUR WILLIAM RUSSELL
DE MORGAN MEDALLIST
1932



Earl Russell received the De Morgan Medal on 16 November 1932. Extract from the President's address: 'The principal work of the medallist is contained in two books, *The Principles of Mathematics* and *Principia Mathematica*, the latter written in collaboration with A.N. Whitehead. The *Principia* has had great influence in many parts of the world. It may also be

mentioned that the *Principia* incorporates several of De Morgan's logical discoveries. The medallist has won distinction in many ways. A friend to whom I was speaking a short time ago knew the name very well, and was much interested to learn that its bearer was a mathematician. It is as a mathematician that we know him and unite to do him honour.'