

### Forthcoming Society Meetings

#### 2006

##### Friday 10 February

London

G. Segal

U. Tillmann

(Mary Cartwright  
Lecture)

##### Monday 15 May

Leicester

Midlands Regional  
Meeting

M. Bridson

N. Hitchin

H. Kraft

A. Zelevinsky

##### Friday 16 June

London

Yu Manin

(Hardy Lecture)

##### Friday 3 July

Leeds

Northern Regional  
Meeting

U. Haagerup

N. Kalton

##### Monday 11 September

Bath

South West & South  
Wales Regional  
Meeting

### COUNCIL DIARY

#### 18 November 2005

The main business at this, the last Council meeting of Frances Kirwan's presidency, was consideration of the Framework Studies Initiative on the relationship between the London Mathematical Society and the Institute for Mathematics and its Applications. Council was very grateful for the carefully considered views that had been received from many members during the consultation period. Council authorised further consideration of versions of the H-framework and the inverted Y-framework, as a route to unification of the two societies. A choice between the two alternatives will be made in March 2006. It was recognised that the H-framework was viable only if it had a life of at most 10 years as a route to unification, with the option for either Council to halt the process at any time. The concerns expressed by members will be considered very carefully over the next few months. Once a plan has been prepared and approved by the Councils of both societies it will be put to the members for a vote according to the rules of their individual charters. For fuller account see page 3 of this *Newsletter*.

Independently of these discussions, October Council had highlighted the need for possible radical revision of the Society's organisation. To progress this, a Council Retreat will be held in January 2006 to discuss matters such as the Society's core values and objectives in the modern world, and to identify and prioritise the activities that are central to members' perception of the LMS. This will lead on to consideration of the governance and management best suited to delivering these outcomes.

Reporting from the November meeting of the Council for the Mathematical Sciences, the President and the Education Secretary expressed concern at the momentum building up from the Bologna agreement, intended to unify qualifications across Europe. Particularly worrying is the pressure to discontinue undergraduate masters degrees such as the MMath. Any department that is asked to reconfigure its courses as a result of the Bologna agreement is urged to contact the CMS Bologna Group, a national committee set up to try to protect the interests of mathematics in this context (the Group may be contacted through Brian Stewart, retiring Education Secretary).

Council received the report of the Programme Committee, which has the dual role of arranging Society meetings and allocating research grants under various schemes. One particular change in policy was approved: from 2007 to reduce the budget for Society Regional Meetings and associated workshops from £8,000 to £7,500, but more significantly to ring-fence £1,500 of the budget to support members and research students to attend the meetings. It was hoped that this would have the dual benefits of increasing regional participation in the meetings and helping to broaden the education of PhD students, as recommended by the International Review of UK Mathematics and sought by the research councils.

The meeting ended with a vote of thanks to the members of Council who were standing down: Amanda Chetwynd (Vice President), Brian Stewart (Education Secretary), and Rachel Camina. Special thanks were accorded to the retiring President, Frances Kirwan, for her dedicated leadership and work over two particularly demanding years.

Kenneth Falconer

## TREASURER'S REPORT TO THE AGM 2005

In the financial year 1 September 2004 to 31 August 2005, the Fixed Assets of the Society increased in value from £10.2m to £11.4m.

During the year, Credit Suisse was replaced as fund manager by Morgan Stanley. The transition was complex, but went smoothly. The new manager has been set the aim of producing a real return of at least 4% pa. The management of the portfolio conforms with the Trustee Act.

The level of the reserve funds was reviewed during the year. The Building and Development Reserve Fund now stands at £442K (reduced from £500K at the beginning of the year); the Printing and Publication Reserve Fund is unchanged at £1.2M. Other reserve funds are used to hold gifts and bequests to the Society (£23K, unchanged on last year), to meet the costs of grants that have been awarded but not yet claimed (£94K), and to separate *Compositio* from other publishing activities (balance transferred at the end of the year). Council has decided to refurbish and extend the

basement area of De Morgan House to provide disabled access and to improve facilities. It is hoped that in future it will be possible to hold more Society and other mathematical meetings there, and also to raise additional revenue by letting the rooms for conferences. Work began over the summer, and will be funded by drawing on reserves, which will be replenished over the coming years from the new revenue generated. Because the Society holds considerable balances in cash, there will be no need to sell investments.

It has been another good year for the Society's publishing activities, which generated a surplus of £757K (against £690K last year). Again I should draw attention to the essential role that the publications' surplus plays in enabling the Society to support mathematical activity in the United Kingdom, and congratulate the Publisher, Susan Hezlet, and all the publications staff for the energetic and forward-looking way in which they pursue the Society's interests. Council continues to be concerned about the implications of proposed changes in scientific publishing and their potential impact on the financial health of the Society.

The total spent on grants, subscriptions, and prizes fell from £345K to £309K. The decrease included a drop of £9K (4.2%) in Programme Committee grants, and is otherwise explained by a fall in the net cost (but not expenditure) of the Research Meetings Committee, the absence of a Hardy Fellow in post during the year, and the fact that there was no major international meeting supported by the Society.

The costs under Administration rose by 2.1% to £557,248. It should be remembered that the costs of running De Morgan House and of supporting the grant-giving activities also come under this heading. The Society's VAT status was renegotiated during the year and the unrecoverable VAT (and account-

ants' costs in resolving the issue) is also included in this increase

Total membership fell slightly to 2572. Subscription income rose from £57K to £61K, and the cost of membership services from £59K to £67K.

There are no dramatic changes to report. I again acknowledge the enormous contribution that Susan Oakes and Peter Cooper make to the orderly conduct of our affairs, and particularly the contribution of Ephrem Belay, who for the first time this year prepared the Society's accounts in-house.

N.M.J. Woodhouse  
Treasurer

## THE LMS AND THE IMA

Discussions about the relationship between the LMS and the IMA have been going on for about two years. The report of the Frameworks Study Initiative was published in April 2005, and copies have been circulated to members. Many written comments were received and these were considered by the LMS Council at its meeting on 18 November, together with feedback from regional meetings.

After discussion, the Council voted by a substantial majority in favour of the following proposal. *The Council authorises further consideration of the merits of versions of the H-framework and the inverted-Y framework, as a route to unification of the two societies.* The Council of the IMA approved an identical proposal at its meeting on 16 November.

It will require much work in order to determine the details of the route, the timetable and, most importantly, the destination. The LMS Council will continue to operate as a fully independent body for the time being. Members will be kept fully informed of progress, and there will be further consultation, as laid down in the Charter, Statutes and By-laws, before any irrevocable decision is made. Regarding the time-scale, Council is

### 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.

mindful of the view that the so-called 'H-framework' should be considered as having a working life of ten years at most.

Further discussion will take place at the next Council meeting on 20 January 2006, and at the Council Retreat which immediately follows it. At these meetings Council will evaluate the merits of the various options

described in the report of the Frameworks Study Initiative. There will also be further discussion with the IMA. It is envisaged that this process will lead to a decision regarding a preferred option at the Council meeting on 17 March.

Norman Biggs  
General Secretary

## LONDON MATHEMATICAL SOCIETY 2005-06 Council

As a result of the annual election, membership of the Council is the following:

<b>President</b>	Professor J.F. Toland FRS (Bath)
<b>Vice-Presidents</b>	Professor M.R. Bridson (Imperial College London) Dr F.A. Rogers (King's College London)
<b>Treasurer</b>	Professor N.M.J. Woodhouse (Oxford)
<b>General Secretary</b>	Professor N.L. Biggs (LSE)
<b>Programme Secretary</b>	Dr S.A. Huggett (Plymouth)
<b>Publications Secretary</b>	Professor J. Howie FRSE (Heriot-Watt)
<b>Education Secretary</b>	Professor C.J. Budd (Bath)
<b>Members-at-Large</b>	Professor I.D. Abrahams (Manchester) Professor R.T. Curtis (Birmingham) Professor H.G. Dales (Leeds) Dr P.J. Davies (Strathclyde) Professor A.M. Etheridge (Oxford) Professor K.J. Falconer FRSE (St Andrews) Professor C.M. Goldie (Sussex) Dr I.G. Gordon (Glasgow) Professor F.P. Kelly FRS (Cambridge) Sir John Kingman FRS (Isaac Newton Institute) Dr N.C. Snaith (Bristol) Dr E. Winstanley (Sheffield)

### January deadlines

- 13th** Polya, Senior Berwick and Whitehead Prizes nominations
- 31st** David Crighton Medal nominations
- 31st** LMS annual subscription payments (final deadline)

## LONDON MATHEMATICAL SOCIETY

### MARY CARTWRIGHT LECTURE

Friday 10 February 2006

Chemistry Auditorium, Christopher Ingold Building,  
University College London, 20 Gordon Street,  
London WC1

**4.15 pm** Graeme Segal (Oxford University)  
*Locality in quantum field theory*

**5.15 pm** Tea

**5.45 pm** Mary Cartwright Lecture  
**Ulrike Tillmann** (Oxford University)  
*The topology of strings:  
Mumford's conjecture and beyond*

A reception will be held at De Morgan House at 7.00 pm with a dinner afterwards at the Il Fornello Restaurant, 150 Southampton Row, London WC1 at 7.30 pm. The cost will be £20.00 per person, inclusive of wine. Those wishing to attend should inform Susan Oakes, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HS, enclosing a cheque payable to the 'London Mathematical Society' to arrive no later than **Monday 6 February**.

There are limited funds available to contribute to the travel expenses of Society members or research students to attend the Society meeting. Requests for support, including an estimate of costs, may be addressed to Isabelle Robinson at the Society (robinson@lms.ac.uk).

## AMBROSE ROGERS

Professor C. Ambrose Rogers FRS, who was elected a member of the London Mathematical Society on 13 December 1945, died on 5 December 2005 at the age of 85. He was born 1 November 1920 and attended Berkhamsted School before studying at University College London 1938-40, including being evacuated to Bangor in 1939. From 1940-5 he served as an experimental assistant and officer in the Applied Ballistic Department of the Ministry of Supply, but managed to keep up his research interest by part-time study at Birkbeck College under the guidance of R.G. Cooke and L.S. Bosanquet.

In 1946 Ambrose returned to UCL as an Assistant Lecturer and began a most fruitful collaboration with Harold Davenport on the Geometry of Numbers. In 1949 he went to the Institute of Advanced Study in Princeton as a Commonwealth Fund Fellow and teamed up with Dvoretzky to produce their famous result on absolute and unconditional convergence. Leaving a Readership at UCL, in 1954 Ambrose went to Birmingham as Mason Professor of Pure Mathematics. In collaboration with Geoffrey Shephard and James Taylor during that period his interest in convex geometry and Hausdorff Measure Theory widened. In particular, with Geoffrey Shephard, he produced sharp bounds for the volume of a difference body, a problem which had been open for 30 years.

A Junior Berwick Prize followed in 1957 and when Davenport moved to Cambridge in 1958, Ambrose returned to UCL as Astor Professor of Pure Mathematics. He was deemed to be too young to be the sole Head of Department and so for the next 28 years he was Joint Head, firstly with W.R. Dean and later with Keith Stewartson. Throughout this period he was the Principal Editor of *Mathematika* a journal that Harold Davenport had founded with the purpose of fast publication of results. In 1959 he was

elected to the Royal Society and in 1961 spent a year in Canada where, in particular, working with Maurice Sion he developed an interest in analytic sets and put the final touches to his influential book *Packing and Covering*.


During the 1960s, Ambrose concentrated mainly on Hausdorff Measure Theory. This culminated in a wonderful example (with Roy Davies) of a compact metric space of infinite Hausdorff measure which has no subsets of finite positive measure. His book *Hausdorff Measures* is a standard text. From 1970-2, following the untimely death of Sir Edward Collingwood, he took over the Presidency of the LMS and in 1977 received the Society's highest honour, the De Morgan Medal. He was also Vice-President from 1958-59 and 1972-74.

During the 1970s his interests switched back to convex sets with spectacular success. This second period produced the famous work on the measure of the directions of line segments on the boundary of a convex body and a 12-dimensional counterexample to the Busemann-Petty problem. Retiring in 1986, he continued to work mainly on analytic sets, in the context of functional analysis, with John Jayne and Isaac Namioka.

Ambrose was a passionate supporter of the LMS and attended every London Meeting until his health began to fail. He was also passionate about research. I recall being summoned to his home to discuss research while he lay in bed recovering from pneumonia. His wide interests and depth of thought meant that most visitors to the UCL Mathematics Department ended up collaborating on a joint project with him.

He was married in 1952 to Joan North, a writer of children's books, who died in 1999. They had two daughters, Jane and Petra. Ambrose was also very proud of the achievements of his nephew L.C.G. (Chris) Rogers.


David Larman  
University College London



**Springer**  
the language of science

springer.com

---



**Graph Theory**  
R. Diestel, University of Hamburg, Germany


From the reviews of the first two editions (1997, 2000) ► *This outstanding book cannot be substituted with any other book on the present textbook market. It has every chance of becoming the standard textbook for graph theory* ► Acta Scientiarum Mathematicarum

3rd ed. 2006. XVI, 410 p. (Graduate Texts in Mathematics, Vol. 173) Softcover  
ISBN 3-540-26183-4 ► € 39,95 | £ 30,50  
Hardcover edition  
ISBN 3-540-26182-6 ► € 69,95 | £ 54,00



**Riemannian Geometry and Geometric Analysis**  
J. Jost, Max Planck Institute for Mathematics in the Sciences, Leipzig Germany

4th ed. 2005. XII, 566 p. 14 illus. (Universitext) Softcover  
ISBN 3-540-25907-4 ► € 44,95 | £ 34,50



**Python Scripting for Computational Science**  
H. P. Langtangen, Simula Research Laboratory, Lysaker, and University of Oslo, Norway

The author teaches you how to develop tailored, flexible, and efficient working environments built from small programs written in Python. The focus is on examples and applications of relevance to computational science.


2nd ed. 2006. Approx. 750 p. (Texts in Computational Science and Engineering, Vol. 3) Hardcover  
ISBN 3-540-29415-5 ► € 49,95 | £ 38,50



**A Taste of Topology**  
V. Runde, University of Alberta, Edmonton, AL, Canada

The present book grew out of notes for an introductory topology course at the University of Alberta. It provides a concise introduction to set theoretic topology.

2005. X, 176 p. 17 illus. (Universitext) Softcover  
ISBN 0-387-25790-X ► € 32,95 | £ 25,50



**The Four Pillars of Geometry**  
J. Stillwell, University of San Francisco, CA, USA

This new textbook approaches geometry in four different ways, spending two chapters on each. This makes the subject accessible to readers of all mathematical tastes, from the visual to the algebraic.

2005. XII, 229 p. 138 illus. (Undergraduate Texts in Mathematics) Hardcover  
ISBN 0-387-25530-3 ► € 39,95 | £ 29,50

---

**Easy Ways to Order for the Americas** ► Write: Springer Order Department, PO Box 2485, Secaucus, NJ 07096-2485, USA ► Call: (toll free) 1-800-SPRINGER ► Fax: +1(201)348-4505 ► Email: orders-ny@springer.com or **for outside the Americas** ► Write: Springer Distribution Center GmbH, Haberstrasse 7, 69126 Heidelberg, Germany ► Call: +49 (0) 6221-345-4301 ► Fax: +49 (0) 6221-345-4229 ► Email: SDC-bookorder@springer.com  
► Prices are subject to change without notice. All prices are net prices. 012107x

## ALBERT BOYD

Professor Albert Vyvyan Boyd, who was elected a member of the London Mathematical Society on 17 January 1952, died on 1 November 2005, aged 75. He began his long and distinguished association with the University of the Witwatersrand (South Africa) in early 1946 as a first year student, on a campus crowded with war veterans. His reaction to certain chemicals persuaded him change direction from Chemistry to the Mathematical Sciences. He graduated in 1949 and was jointly awarded the William Cullen gold medal for the most distinguished graduate in Science Faculty, obtaining an Honours (first class) and a Masters degree.

He became a graduate assistant in 1950 and a lecturer in Mathematics in 1953. His teaching duties oscillated between Mathematics and Mathematical Statistics, with Statistics being the focus since the '80s. On retiring in 1995, he continued as an Honorary Research Fellow, assisting with sessional lectures. As his illness progressed, and his voice became too soft for the classroom, he continued to prepare and update course material and mentor any member of staff who asked for help, often using checks on test and examination questions for this. For him there was only one way – the correct way, and he required it of all who worked with him. The last of his 37 papers was published in 2001.

He developed a course on Actuarial Mathematics in the '70s, resulting in the Actuarial Science undergraduate and post-graduate program. A former head of department and director of Actuarial Studies wrote upon hearing of his death: 'I know that he generated a warm appreciation from the actuarial students that he taught, although I often thought that they did not fully appreciate his exceptional gifts in laying down an undoubtedly world class foundation for their statistical and actuarial training.'

Albert was a superb organiser, giving

detailed and meticulous instructions in his precise handwritten notes. His examples, exercises, and assignments were illustrative and extended concepts, and were frequently updated from recent journal articles. He was a diffident and shy man, but he could still a rowdy lecture theatre (and a student whom he felt had not given sufficiently to the work required) with a piercing look and some very sharp words.

His final job, on the day before his death, was to evaluate the 2006 SA Statistical Association education committee bursary applications. Albert never left work unfinished.

## QUEEN'S ANNIVERSARY PRIZE

The Millennium Mathematics Project has been awarded a Queen's Anniversary Prize for Higher and Further Education. This is the highest award for achievement in the higher and further education sector and is the educational and research counterpart of the Queen's Awards for Industry.

The Millennium Mathematics Project (MMP) was launched in 1999 as a joint project between the Faculties of Mathematics and Education at the University of Cambridge. The aim of the project is to support mathematics education in primary and secondary schools throughout the UK and promote the development of mathematical skills and understanding, particularly through enrichment and extension activities beyond the school curriculum, and through activities designed to increase the mathematical understanding of the general public.

The project's activities have a significant regional, national and international impact, and MMP resources have been repeatedly commended by the Department for Education and Skills.

Professor John D Barrow FRS, the Director of the Millennium Mathematics Project, said: 'I am delighted that the Millennium

Mathematics Project has been awarded the Queen's Anniversary Prize. This is a tribute to the vision of those in the University who initiated this project, those in the outside world who added their support for it, and all the members of our dedicated Project team who have made such a wide-ranging impact in schools and amongst the general public. This Prize is also a welcome confirmation of the vital importance of mathematics to the United Kingdom.'

The Queen's Anniversary Prizes recognise and honour outstanding achievement and excellence at world-class level in UK universities and colleges. All universities and colleges

across the UK are invited to make a single entry in each biennial round. Entries must demonstrate outstanding achievement and benefit brought to the institution and the wider community, and the Awards Council look in particular for signs of initiative, innovation and originality.

Uniquely in the field of education, these Prizes sit within the national honours system. Names of Prize-winners are put forward to the Prime Minister, who advises the Queen and seeks her assent. The formal presentation of the Prize medal by Her Majesty the Queen will take place at Buckingham Palace on 16 February 2006.

## ANNUAL LMS SUBSCRIPTION 2005-06

The Society is appreciative of those members who have paid their 2005-06 subscriptions. May we remind those who have not yet paid, that subscriptions were due on 1 November 2005. Prompt payment ensures continuity of publications and avoids the need for time-consuming reminders. The Society reserves the right to discontinue the supply of periodicals and the *Newsletter* to members whose subscription remains unpaid by **31 January 2006**.

The methods of payment are either by a sterling cheque drawn on a UK bank; a US\$ cheque drawn on a US bank, direct debit or credit card. It is our preference that members who have a UK bank account, pay by direct debit. Request a direct debit mandate to take advantage of this convenient form of payment. If you have misplaced your renewal of subscription form either download the form from the membership section of the LMS website ([www.lms.ac.uk](http://www.lms.ac.uk)) or contact the LMS office (email: [membership@lms.ac.uk](mailto:membership@lms.ac.uk); tel: 020 7637 3686; fax: 020 7323 3655).

### Individual members 2005-06 rates:

Subscriptions	£	US\$
Ordinary	36.00	72.00
Reciprocity	18.00	36.00
Associate	9.00	18.00
European Mathematical Society (additional)	16.00	32.00
<b>Publications</b>		
<i>Bulletin</i> Volume 38	36.00	72.00
<i>Journal</i> Volumes 73 & 74	72.00	144.00
<i>Proceedings</i> Volumes 92 & 93	72.00	144.00
<i>JCM</i> (electronic) Volume 9	free	free
<i>Nonlinearity</i> Volume 19	57.00	
	– except North America	
	– North America	145.00
<i>Journal of Applied Probability</i> Volume 43	43.00	86.00
<i>Journal of the European Mathematical Society</i> Volume 8	34.00	68.00

## LONDON MATHEMATICAL SOCIETY

### Cecil King Travel Scholarship

The London Mathematical Society annually awards a Cecil King Travel Scholarship in Mathematics to the value of £5000, to a young mathematician of outstanding promise, to support a period of study or research abroad for a typical period of three months. Many mathematicians have found that such a visit has benefited both their mathematics and their career; the Society urges young mathematicians and their supervisors seriously to consider this opportunity.

The award is competitive and based on a written proposal describing the intended programme of study or research abroad and the benefits to be gained from such a visit.

Applicants should normally be nationals of the UK or Republic of Ireland, under the age of 25 years, either registered for or having recently completed a doctoral degree at a UK University.

The initial application should include:

- a completed application form;
- a short proposal (4 pages maximum) indicating the proposed programme of study abroad, the benefit of such an opportunity in advancing the candidate's studies, and the Institution that the candidate wishes to visit;
- a letter of support from the applicant's Head of Department, or from his or her Research Supervisor.

Candidates selected for interview will be asked to approach the intended research institution or research leader to be visited, to confirm that a visit would indeed be welcomed if an award were made.

At the end of the Scholarship, the student will be expected to write a short report indicating the activities and benefits gained from the visit.

The Cecil King Travel Scholarship was established in 2001 by the Cecil King Memorial Fund. The award is made by the Council of the London Mathematical Society on the recommendation of the Cecil King Prize Committee, nominated by the Society's Education Committee.

Application forms for the 2006 Scholarship are available on the Society's website ([www.lms.ac.uk/activities/cecil\\_king/index.html](http://www.lms.ac.uk/activities/cecil_king/index.html)) or from Isabelle Robinson at the Society ([robinson@lms.ac.uk](mailto:robinson@lms.ac.uk)). The closing date for applications is **Friday 10 February 2006**.

The London Mathematical Society is a registered charity for the promotion of mathematical knowledge.

### LONG-STANDING MEMBERS

The following is a list of mathematicians who have completed fifty years or more of membership of the London Mathematical Society, with their date of election.

13 Dec 34	Meyler, D.S.	17 Jun 48	Bateman, P.T.	18 Dec 52	Reeve, J.E.
8 Feb 40	Kendall, D.G.	18 Nov 48	Mullender, P.	18 Jun 53	Rayner, M.E.
17 Dec 40	Good, I.J.	13 Dec 48	Fishel, B.	18 Jun 53	Marstrand, J.M.
17 Mar 43	Dyson, F.J.	20 Jan 49	Borwein, D.	17 Dec 53	Ringrose, J.R.
15 Jun 44	Williams, A.E.	17 Mar 49	Kilmister, C.W.	17 Dec 53	Gruenberg, K.W.
25 Jan 45	Ollerenshaw, K.	28 Apr 49	Austin, M.C.	17 Dec 53	Samet, P.A.
25 Jan 45	Collard, K.	19 Jan 50	Shepherdson, J.C.	21 Jan 54	Zeeman, E.C.
17 May 45	Henstock, R.	16 Feb 50	Lehner, J.	18 Feb 54	Cohen, D.E.
28 Jun 45	Tropper, A.M.	23 Mar 50	Ponting, F.W.	18 Feb 54	James, I.M.
25 Apr 46	Rothman, M.	15 Jun 50	Ackroyd, R.T.	17 Jun 54	Taylor, S.J.
23 May 46	Huppert, E.L.	14 Dec 50	Patterson, E.M.	25 Nov 54	Amson, J.C.
23 May 46	Rees, D.	19 Apr 51	Chen, D.L.C.	25 Nov 54	Halberstam, H.
19 Dec 46	Ruston, A.F.	17 May 51	Roth, K.F.	16 Dec 54	Preston, G.B.
19 Dec 46	Higman, G.	14 Jun 51	Jackson, M.	27 Jan 55	Atiyah, F.J.
16 Jan 47	Macbeath, A.M.	14 Jun 51	Ledermann, W.	24 Feb 55	Rayner, F.J.
20 Mar 47	Hayman, W.K.	20 Dec 51	Herszberg, J.	24 Mar 55	Farahat, H.K.
22 May 47	Ghaffari, A.	20 Dec 51	Dowker, Y.N.	12 May 55	Murdoch, B.H.
19 Jun 47	Cassels, J.W.S.	17 Jan 52	Wilson, D.H.	12 May 55	Wall, G.E.
27 Nov 47	Hilton, P.J.	15 Feb 52	Shephard, G.C.	12 May 55	Harrop, R.
18 Mar 48	Burkill, H.	20 Mar 52	Bonsall, F.F.	15 Dec 55	Armitage, J.V.
18 Mar 48	Isaacs, G.L.	20 Mar 52	Swinerton Dyer, H.P.F.	15 Dec 55	Butler, M.C.R.
18 Mar 48	Reade, M.O.	20 Nov 52	Knight, A.J.	15 Dec 55	Newman, M.

### ACME UPDATE

#### Subject specific issues for teachers

The Advisory Committee on Mathematics Education (ACME) continues to work closely with key stakeholders to ensure that the new National Centre for Excellence in the Teaching of Mathematics offers sound strategic direction on mathematics CPD. Close involvement of ACME in the work of the Teaching and Development Agency for Schools on professional standards for teachers will help bring more coherence to the accreditation of CPD mathematics teachers, thereby making it more relevant. For further information see: [www.royalsoc.ac.uk/acme/mathsteaching.htm](http://www.royalsoc.ac.uk/acme/mathsteaching.htm).

#### Post14 Mathematics

ACME held a focused workshop on 13 October to allow the Committee Members and others in the mathematics community to consider the way forward on 14-19 mathematics curriculum change and the Committee subsequently offered advice to those charged with implementation. A report on the workshop will be available on the website from mid-December, see: [www.royalsoc.ac.uk/acme/post14.htm](http://www.royalsoc.ac.uk/acme/post14.htm).

#### Projects

ACME is contracting consultants to provide additional data on mathematics in Further Education colleges and expects to receive a report from them by end of February 2006. ACME is currently scoping out work on a primary project.

## NEWS FROM THE EPSRC MATHEMATICAL SCIENCES PROGRAMME

### Senior Media Fellowships

The Public Engagement Programme invites applications for Senior Media Fellowships. These enable leading researchers to devote time to develop a higher media profile. The aim is to advance public engagement with the physical sciences, mathematics and engineering via the broadcast and written media. Senior Media Fellowships are intended to be used for active development of media opportunities (not research, scholarship or teaching). There is an email account specifically for enquiries relating to this call ([seniormediafellowships@epsrc.ac.uk](mailto:seniormediafellowships@epsrc.ac.uk)).

Current senior media fellows are:

- Noel Sharkey (Robotics, University of Sheffield)
- Tony Ryan (Materials Chemistry, University of Sheffield)
- David Howard (Electrical Engineering, University of York)
- Marcus du Sautoy (Mathematics, University of Oxford)

The closing date for this call is **12 noon 26 January 2006**.

### Bridging the Gaps between Mathematical Sciences, ICT and Engineering

#### Workshop and Call for Proposals

EPSRC wishes to promote interdisciplinary working, within institutions, across the broad research areas of the mathematical sciences, information and communications technology (ICT), and engineering. Funding is available to support institutions in the development of collaborative research programmes. Institutions are invited to submit a bid for funding to establish an environment that nurtures interdisciplinary working.

A workshop to scope this activity will be

held at the NEC Birmingham on 16-17 January 2006. The principal aims of the event are to:

- Discuss the challenges of interdisciplinary working
- Consider various approaches to collaboration and learn from previous experience
- Scope elements/activities that might form part of an award
- Identify possible interdisciplinary research themes

Closing date for receipt of proposals is **12 noon 26 April 2006**.

### Call for Statistics Mobility Fellowships

The Mathematical Sciences Programmes are offering Statistical Mobility Fellowships to enable researchers without a permanent position and from a non-statistics background to move into statistics within 10 years of completing their PhD. Each fellowship is to be linked to a statistics mentor who will be responsible for ensuring that the fellow will acquire the necessary statistical expertise and who will advise the fellow on the research project associated with the fellowship. The fellowship will be for three years with the expectation that in the first year the fellow will familiarise him/herself with the necessary statistical training while the second and third year will be spent carrying out research involving substantial innovation in statistical theory or methodology. Closing date is **12 noon 9 March 2006**.

Please see a full list of current calls on our website: [www.epsrc.ac.uk/CallsForProposals](http://www.epsrc.ac.uk/CallsForProposals). For details on the Mathematical Sciences Programme, please see: [www.epsrc.ac.uk/ResearchFunding/Programmes/MathematicalSciences](http://www.epsrc.ac.uk/ResearchFunding/Programmes/MathematicalSciences).

## ADAMS PRIZE

The Adams Prize for 2004, on the subject *Differential Equations*, has been awarded jointly to Dr M. Dafermos and Dr D. Stuart of the Faculty of Mathematics, Cambridge University.

## FACES COMPETITION

Have you considered what to do to celebrate the New Year after you have filled in the bumper-size Sudoku puzzles and read the LMS Book of Presidents? You might like to get a little help from your friends in identifying the faces on this year's LMS Publications Catalogue (sent out with the November issue.) We don't know who all the faces are, so don't be discouraged if you can only name a few – there is a prize of 10 books from the Lecture Notes and Student Texts and full details can be found at [www.lms.ac.uk/publications/facescomp.html](http://www.lms.ac.uk/publications/facescomp.html). Invite the mathematics department round for mulled wine and leftover mince pies to play spot the mathematician!

## NEWS FROM THE IMU

### ICM 2006

Information about special activities.

- Emmy Noether Lecture: Yvonne Choquet-Bruhat (Université Pierre et Marie Curie, Paris)
- e-Learning Mathematics, a panel discussion organised by the Executive Committee of the Spanish Conference of Deans of Mathematics ([www.usc.es/mate/cdm](http://www.usc.es/mate/cdm))
- Special lecture on the Poincaré Conjecture: John Morgan (Columbia University, New York)

For further information see: [www.icm2006.org/scientificprogram/specialactivities](http://www.icm2006.org/scientificprogram/specialactivities).

### 2005 Clay Research Awards

Manjul Bhargava (Princeton University, USA) and Nils Dencker (Lund University, Sweden) have been awarded the 2005 Clay Research Awards, which recognize extraordinary achievement in mathematics. The Clay Mathematics Institute (CMI) recognized Bhargava for his discovery of new composition laws for quadratic forms, and for his work on the average size of ideal class

groups. CMI recognized Dencker for his complete resolution of a conjecture made by F. Treves and L. Nirenberg in 1970. The awards were presented at CMI's annual meeting on 11 October 2005 at Oxford University, at which there were talks on the awardees' work and a public lecture by Sir Andrew Wiles ([www.claymath.org/news/research\\_award\\_2005.php](http://www.claymath.org/news/research_award_2005.php)).

### Electronic World Directory of Mathematicians

Two years ago, IMU asked every mathematician to set up and maintain a personal homepage and to register the homepage at the Electronic World Directory of Mathematicians (EWDm), see 'The Personal Homepage Call' at [www.mathunion.org/MPH-EWDm](http://www.mathunion.org/MPH-EWDm). On 6 October 2005, the 1000th mathematician registered.

The webpage [www.mathunion.org/ewdm](http://www.mathunion.org/ewdm) offers a simple search interface allowing to look for registered persons (try John), institutions (try ZIB), or countries (try America). For reasons of data protection, all email addresses are listed as images. This minimizes misuse.

Below is the list of top ten countries (with the largest number of registered persons on 12 November 2005):

134	UK	36	Canada
122	USA	33	India
88	Germany	32	Russia
67	France	29	Spain
44	Italy	29	Iran

If you are interested in joining EWDm, please go to [www.mathunion.org/ewdm/join.php](http://www.mathunion.org/ewdm/join.php) for the registration mechanism. The registration form allows easy subscription to IMU-Net as well. And tell your friends and colleagues about EWDm and IMU-Net.

The above items are taken from the 14th issue of the IMU electronic newsletter IMU-Net (see [www.mathunion.org/Publications/Newsletter](http://www.mathunion.org/Publications/Newsletter)).

## 58TH BRITISH MATHEMATICAL COLLOQUIUM

The 58th British Mathematical Colloquium will be held at the University of Newcastle, from 1 pm on Monday 10 April to 1 pm Thursday 13 April 2006.

### Plenary speakers:

- Nigel Higson (Penn State, USA)
- Victor Kac (MIT, USA)
- Alexander Kirillov (Pennsylvania, USA)
- Preda Mihailescu (Paderborn, Germany)

### Morning speakers include:

- Gordon Blower (Lancaster)
- Manfred Schocker (Swansea)
- Mihalis Dafermos (Cambridge)
- Anthony Scholl (Cambridge)
- Michael Farber (Durham)
- Eugene Shargorodsky (King's College London)
- Jim Howie (Heriot-Watt)
- Nicole Snashall (Leicester)
- Charles Read (Leeds)

### Analysis and Geometry on Groups special session

- Paul Baum (Penn State, USA)
- Alain Valette (Neuchtel, Switzerland)
- Andrzej Zuk (CNRS, Paris, France)

### Operator Theory special session

- Miroslav Engliš (Czech Academy of Sciences)
- Kristian Seip (NTNU, Trondheim, Norway)
- Joel Shapiro (Michigan State University, USA)

### Public Lecture by David Acheson (Oxford)

In addition, there are splinter groups being organised allowing for contributed talks in the following areas:

- Arithmetic algebraic geometry
- Operator theory
- Random matrices and operators
- Geometry and topology
- Logic
- Semigroup theory
- Group theory and its applications
- Differential equations
- Hyperbolic geometry
- Operator algebras

To register and book accommodation, visit the BMC 2006 website [www.ncl.ac.uk/bmc06](http://www.ncl.ac.uk/bmc06). Details on registration fees, payment deadlines, and so forth are contained in the registration form. The principal deadline is 28 February for university accommodation and reduced registration fees.

The organisers are: Michael Dritschel, Andrew Duncan, Zina Lykova, Graham Niblo, Jonathan Partington, Alina Vdovina and Michael White. They gratefully acknowledge the support of the London Mathematical Society, the Edinburgh Mathematical Society, the Engineering and Physical Sciences Research Council and the SAgE Faculty Research Committee of Newcastle University.

## LONDON MATHEMATICAL SOCIETY

### MEETINGS IN 2006

#### Friday 10 February – London

- **Mary Cartwright Lecture**  
G.B. Segal (Oxford)  
U.L. Tillmann (Oxford)

#### Monday 15 May – Leicester

- **Midlands Regional Meeting**  
*Teichmüller Theory and Cluster Algebras*  
M. Bridson (Imperial College London)  
N. Hitchin (Oxford)  
H. Kraft (University of Basel, Switzerland)  
A. Zelevinsky (Northeastern University, Boston)

#### Friday 16 June – London

- **Hardy Lecture**  
Yu Manin (Northwestern University, Evanston)

#### Friday 3 July – Leeds

- **Northern Regional Meeting**  
*Functional Analysis*  
U. Haagerup (Odense, Denmark)  
N. Kalton (Missouri)

#### 11 September – Bath

- **South West & South Wales Regional Meeting**  
*Analysis and Stochastics of Growth Processes*

#### Friday 17 November – London

- **Annual General Meeting**  
*Geometric Analysis*

As usual all the regional meetings will have an associated workshop.



## NUMBER THEORY AND POLYNOMIALS

A workshop on *Number Theory and Polynomials* will be held at the Department of Mathematics, University of Bristol, from 3-7 April, sponsored by the Heilbronn Institute for Mathematical Research. The organisers are J.F. McKee and C.J. Smyth, and confirmed main speakers include:

- Francesco Amoroso (Caen)
- Marie Jose Bertin (Paris)
- Frits Beukers (Utrecht)
- Peter Borwein (Simon Fraser)
- Steve Cohen (Glasgow)
- Arturas Dubickas (Vilnius)
- Tamas Erdelyi (Texas A&M)
- Graham Everest (UEA)
- Michael Filaseta (South Carolina)
- Alan Lauder (Oxford)
- Michael Mossinghoff (Davidson)
- Igor Pritsker (Oklahoma State)
- Georges Rhin (Metz)
- Andrzej Schinzel (Warsaw)

Further information, and registration forms, may be obtained from the conference website: [www.maths.bris.ac.uk/heilbronn/conferences.html](http://www.maths.bris.ac.uk/heilbronn/conferences.html).

## ISAAC NEWTON INSTITUTE Call for Proposals

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. Sixty-one programmes have now been completed, the most recent being *Model Theory and Applications to Algebra and Developments in Quantitative Finance*. The programmes currently taking place are *Pattern Formation in Large Domains* and *Global Problems in Mathematical Relativity*.

The Institute now invites new proposals for programmes for 2008 onwards. A choice of six-month or four-month programmes is available, and short programmes of four weeks' duration are invited for July/August each year. These short programmes are intended for more narrowly focussed 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, at the Institute. Proposers should state whether they would prefer a six-month, four-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 (April 2006) should be received by **31 January 2006**.

The Call for Proposals, together with submission instructions and a summary of future programmes so far confirmed, is available at [www.newton.cam.ac.uk/callprop.html](http://www.newton.cam.ac.uk/callprop.html).

## YORKSHIRE AND DURHAM GEOMETRY DAY

A Yorkshire and Durham Geometry Day will be held at the School of Mathematics, University of Leeds on Friday 20 January. Yorkshire and Durham Geometry Days are a joint seminar series of the Universities of Durham, Leeds and York, supported by a Scheme 3 LMS grant. For further information contact John Wood ([j.c.wood@leeds.ac.uk](mailto:j.c.wood@leeds.ac.uk)) or Martin Speight ([speight@maths.leeds.ac.uk](mailto:speight@maths.leeds.ac.uk)) or visit the website [www.maths.leeds.ac.uk/pure/geometry/ydgd](http://www.maths.leeds.ac.uk/pure/geometry/ydgd).

## ALGORITHMIC BIOLOGY

The Institute for Mathematical Sciences (Singapore) is organizing a programme on Algorithmic Techniques in Computational Biology. The programme will take place from June 1 – 31 July in Singapore. The organizing committee of this programme consists of:

- Hon Wai Leong (National University of Singapore)
- Pavel Pevzner (University of California, San Diego)
- Franco Preparata (Brown University)
- Ken W. K. Sung (National University of Singapore)
- Louxin Zhang (National University of Singapore)

The theme of this programme is algorithmic biology: algorithmic techniques in computational biology. The programme will bring together researchers in algorithmic biology from a wide spectrum of application areas including, but not limited to, sequence comparison and analysis, microarray design and analysis, whole genome alignment, motif finding, recognition of genes and regulatory elements, gene network, phylogeny reconstruction, phylogenetic networks, molecular evolution, computational proteomics, and systems biology. The programme will consist of tutorials and workshops, with ample opportunities for collaborative research among local and international participants.

### Activities of the programme:

- Workshop 1: Regulatory Genomics (19 – 23 June, tentative)
- Workshop 2: Bioalgorithmics (17 – 21 July)
- Tutorials: (to be advised)

For further information and registration, visit the website [www.ims.nus.edu.sg/Programs/algorithmicbiology/index.htm](http://www.ims.nus.edu.sg/Programs/algorithmicbiology/index.htm). For general enquiries email [imssec@nus.edu.sg](mailto:imssec@nus.edu.sg). For enquiries on scientific aspects of the programme email Hon-Wai Leong ([leonghw@comp.nus.edu.sg](mailto:leonghw@comp.nus.edu.sg)).

## RANDOMNESS AND COMPLEXITY

A workshop on *Randomness and Complexity* will be held in the Department of Mathematics, University of Bristol, from 3-7 July, sponsored by the Heilbronn Institute for Mathematical Research. The organisers are D.J.A. Welsh and M.R. Jerrum. Preliminary enquiries should be addressed to the Heilbronn co-ordinator, Cathy Badley ([Cathy.Badley@bristol.ac.uk](mailto:Cathy.Badley@bristol.ac.uk)).

## RANDOM MATRIX THEORY

The Institute for Mathematical Sciences (Singapore) is organizing a programme on *Random Matrix Theory and its Applications to Statistics and Wireless Communications*. The programme will take place from 26 February – 31 March in Singapore. The organizing committee of this programme consists of:

- Zhi-Dong Bai (National University of Singapore)
- Yang Chen (Nankai University, China, and Imperial College, London)
- Ying-Chang Liang (Institute for Infocomm Research, Singapore)

It is proposed to invite workers in probability, mathematical statistics, mathematical physics, and wireless communications with the intention of cross-fertilization. In line with the interest of the organizers, it is likely that term visitors will be working in these fields. Reflecting the theme of the programme, there will be tutorials for the purposes of introducing the classical aspect of random matrix theory to postgraduate students and the more specialized topics in statistics and wireless communications. The programme will consist of tutorials and workshops, with ample opportunities for collaborative research among local and international participants.

For further information and registration, visit the website [www.ims.nus.edu.sg/Programs/randommatrix/index.htm](http://www.ims.nus.edu.sg/Programs/randommatrix/index.htm). For general

enquiries email [imssec@nus.edu.sg](mailto:imssec@nus.edu.sg). For enquiries on scientific aspects of the programme email Zhi-Dong Bai ([stabaizd@nus.edu.sg](mailto:stabaizd@nus.edu.sg)).

## KOLMOGOROV LECTURE

This annual University of London lecture celebrates the life and work of Andrei Nikolaevich Kolmogorov, one of the greatest mathematical and scientific minds of the last century. The lecture addresses current issues arising from the impact of Kolmogorov's work in the fields of mathematical and computer science. The 2005 event was a great success, with Professor Per Martin-Löf giving the lecture to an audience of approximately one hundred people.

Each Kolmogorov Lecture is given by one of the leading figures in their field, who is presented with a medal in recognition of their own contribution to science. The lecture at the Fourth Annual Kolmogorov Lecture on 3 February at Royal Holloway, University of London, will be given by Professor Norma Rissanen, Professor Emeritus of Tampere University. It is entitled *The Structure Function and Distinguishable Models of Data*. Contact Amanda Baker ([Amanda.Baker@cs.rhul.ac.uk](mailto:Amanda.Baker@cs.rhul.ac.uk)) for information and reservations or visit the website [www.clrc.rhul.ac.uk](http://www.clrc.rhul.ac.uk).

## POSTGRADUATE OPEN DAY

King's College London is holding a Postgraduate Open Day in Mathematics on Friday 17 February. Research degrees are offered in a wide range of topics. Provisional programme:

- Brief address by the Head of Department, Professor Andrew Pressley
- Talk on Analysis and Partial Differential Operators
- Talk on Number Theory
- Presentation of MSc and PhD programmes in Theoretical Physics

- Presentation of MSc and PhD programmes in Financial Mathematics and Applied Probability
- Presentation of MSc and PhD programmes in Information Processing, Disordered Systems and Neural Networks.
- Panel Discussion *Doing an MSc, MPhil or PhD at King's*
- Tea and informal discussion

Interviews (for PhD candidates), further meetings with MSc applicants and discussions with current postgraduate students will take place throughout the day. For copies of the registration form and further information contact: Miss Rebecca Cullen, Postgraduate Administrator, Mathematics Department, King's College London, Strand, London WC2R 2LS (tel: 020 7848 2107, email: [pg.maths@kcl.ac.uk](mailto:pg.maths@kcl.ac.uk)) or visit the website at [www.mth.kcl.ac.uk/postgraduate/openday2006](http://www.mth.kcl.ac.uk/postgraduate/openday2006).

Applications for taught masters and research degrees may be submitted at any time using the forms available on the website or from the above address. However, those PhD candidates who wish to arrange an interview during the Open Day are strongly encouraged to submit their application no later than **Friday 27 January**.

## EINSTEIN AND BEYOND LMS Spitalfields Day Report

This Spitalfields Day was held at the Isaac Newton Institute on 7 November 2005 in conjunction with the programme *Global Methods in Mathematical Relativity*, which is running at the INI from August to December this year. The Day marks the 90th birthday of General Relativity, the tough younger sibling of the centenarian Special Relativity, and consisted of three talks on it and its extensions.

Under the title *Quantum Riemannian Geometry and its Ramifications*, Abhay Ashtekar (Penn State) described the programme for quantum gravity pursued by him and collaborators. The aim is to construct a rigorous, background-independent quantisa-

tion of general relativity. This leads to a striking new view of the physical universe in which, for example, area is quantised. For a system with finitely many degrees of freedom, it leads to a modified quantum mechanics and, in an application to cosmology, it becomes possible to evolve through the Big Bang, an idea which recurs below.

Karsten Danzmann (Albert Einstein Institute and University of Hannover) gave a very polished talk on *Gravitational wave astronomy: The large detectors are going into operation!*, with excellent graphics, including Einstein on a bicycle. The subject is full of exciting prospects, as the observing run of the Geo 600 detectors starts at the end of this year and the project will be fully operational and collaborating with the LIGO project from next spring. Already, the teams are looking forward to the next generation of detectors, which includes the ambitious LISA project for a vast detector based on an array of satellites.

Finally, the hall was packed for Sir Roger Penrose on *Before the Big Bang? A new perspective on the Weyl curvature hypothesis*. Accepting the observations of a positive cosmological constant, and assuming that all massive particles decay eventually, Sir Roger proposes a new view of the Universe at very late times. Then the matter content is solely massless particles and radiation, and space-time is very simple conformally. Now, according to his Weyl Curvature Hypothesis, the initial singularity of the Universe has finite or possibly zero Weyl curvature and so, at the level of conformal structure, the very early and very late Universe are very similar. They are distinguished by the behaviour of conformal factor but, Sir Roger suggests, the conformal structure at the end of a phase of expansion may be continued through infinity as a new Big Bang.

These were three excellent talks, whose different styles complemented each other well.

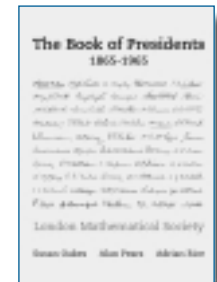
Paul Tod

## The Book of Presidents 1865-1965

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](mailto:lms@lms.ac.uk) to place your order. The LMS members price is £15, the full price is £19.



## RECORDS OF PROCEEDINGS AT MEETINGS

### ANNUAL GENERAL MEETING

held on *Friday 18 November 2005* at University College London. About 90 members and visitors were present for all or part of the meeting.

The meeting began at 3:15 pm, with the President, Professor F.C. KIRWAN FRS, in the Chair. The President reported that a recommendation for the scrutineers had not been made to the June General Meeting; on a recommendation from Council it was agreed to elect Dr D.J. Collins and Professor P.T. Saunders as scrutineers. Members who had not yet voted were invited to hand their ballot papers to the scrutineers.

The Treasurer, Professor N.M.J. Woodhouse, presented his annual report, which would be published in the *Newsletter*. Recommendations for Auditors for 2005/06 would be brought to the June General Meeting to allow time for a competitive review.

Seven people were elected to Ordinary Membership: K.U. Baur, A.M. Clark Jeavons, M. Haase, D.D. Joyce, P.E. Lisseter, F.G. Moller, A.C. Simpson; four people were elected to Associate Membership: F.T. Brunk, A.J. Collins, H.R. Pye, K.D. Smallbone. Five members signed the book and were admitted to the Society.

The President, on Council's behalf, presented certificates to the 2005 Society Prizewinners: Pólya Prize: Sir Michael Berry FRS, Senior Whitehead Prize: Professor H.K. Moffatt FRS, Berwick Prize: Dr I.G. Gordon; two of the Whitehead Prizes: Dr B. Kirchheim and Professor N.P. Strickland.

Professor Burt Totaro, gave a lecture entitled *Dividing sheep from goats: applications of the idea of 'stability' from geometric invariant theory*.

After tea, Dr Collins announced the results of the ballot. The following Officers and Members of the Council were elected: President: J.F. Toland FRS; Vice Presidents: M.R. Bridson; F.A. Rogers; Treasurer: N.M.J. Woodhouse; General Secretary: N.L. Biggs; Programme Secretary: S.A. Huggett; Publications Secretary: J. Howie; Education Secretary: C.J. Budd; Members at Large of Council for two years: R.T. Curtis, P.J. Davies, A.M. Etheridge, C.M. Goldie, I.G. Gordon, J.F.C. Kingman, Member at Large for one year: E. Winstanley. Council membership is completed by the following who were elected for two-year terms in 2004: I.D. Abrahams, H.G. Dales, K.J. Falconer, F.P. Kelly, N.C. Snaithe. The following members were elected to the Nominating Committee: P.J. Gibling, M.A.H. MacCallum.

The newly elected President, Professor J.F. TOLAND FRS, took the Chair. The retiring President, Professor F.C. Kirwan FRS, then gave her Presidential address on *Yang Mills theory and Tamagawa numbers: the fascination of unexpected links in mathematics*.

After the meeting, a reception was held at De Morgan House, followed by the Annual Dinner, which was held at the Montague Hotel on the Gardens, and attended by 83 people.

### LMS ANNUAL GENERAL MEETING

Friday 18 November 2005

A large audience attended this interesting and enjoyable meeting. The routine business of the annual elections, the Treasurer's report, appointment of auditors, admissions to the Society and the award of prize certificates to the 2005 LMS prizewinners was followed by the first talk, given by Professor Burt Totaro. After introducing the problem of constructing quotient spaces in algebraic geometry (initially for the case of a linear action of a reductive group  $G$ ), he outlined the basics of Geometric Invariant Theory (GIT). One defines stable (semistable, polystable) points, and a good quotient exists for the set of stable points. Next came the Hilbert Mumford criterion for stability, and the geometric approach of Kempf and Ness using a Hermitian metric invariant under a maximal compact subgroup of  $G$ , and its attractive application to the classical problem of  $d$  tuples in  $P^1$ .

Mumford's extension of the theory using a  $G$ -linearisation leads to his famous study of

the moduli space of vector bundles on an algebraic curve  $\Sigma$ , where stability is characterised by a condition on slopes of sub bundles. Geometrically, such a bundle is polystable if and only if it has a projective flat metric; more generally, a vector bundle over any compact Kähler manifold is polystable if and only if it has a Hermitian Einstein metric. A conjecture of Donaldson offers an analogous characterisation of Kähler metrics of constant scalar curvature on algebraic varieties. An apparently innocent example is that of a vector space equipped with a number  $N$  of filtrations. Again there is a simple criterion for stability. This example is related to a number of interesting questions, including vector bundles and Roth type approximation theorems, and to the question of relations between the eigenvalues of Hermitian matrices  $A$ ,  $B$  and  $A + B$ .

Professor Frances Kirwan began her Presidential address by announcing her plan to relate different coloured approaches to the problem of calculating the Betti numbers of moduli spaces of stable bundles (of given mutually coprime rank and degree) over a



J.F. Toland M. Berry I.G. Gordon F.C. Kirwan B. Kirchheim N.P. Strickland H.K. Moffatt

fixed curve: the (orange) number theory method, counting objects defined over finite fields, and the (green) differential geometry method using Yang Mills theory, linked by algebraic geometry (red) using GIT, and topology (brown) using configuration spaces.

In the method of Atiyah and Bott one uses equivariant Morse theory for the Yang Mills functional on the space of connections (or equivalently holomorphic structures) on a smooth bundle, modulo gauge equivalence. Morse theory induces a stratification of this space, with two holomorphic bundles in the same stratum iff their canonical filtrations (with semistable quotients with decreasing slopes) have pieces with the same ranks and degrees. The stratification is equivariantly perfect; the equivariant cohomology of the total space is easily calculated, and by induction we obtain the equivariant Betti numbers for the open stratum, which coincide with the ordinary Betti numbers of the moduli space.

In the method of Harder and Narasimhan we are led to an analogous study of the coset space  $SL_n(A_K)/SL_n(K)$ , where  $A_K$  denotes the adèle ring of the field  $K$  of functions on  $\Sigma$ , which is now defined over a finite field. There is a corresponding stratification, and one is led to an inductive procedure for counting isomorphism classes of bundles and thus, via the Weil conjectures, computing the Betti numbers of the moduli space. The crucial step here (corresponding in the Yang Mills method to the simple description of the cohomology of the classifying space of the gauge group) is the basic result that the Tamagawa number – the measure of  $SL_n(A_K)/SL_n(K)$  with respect to a canonical measure on  $SL_n(A_K)$  – is 1.

To link these methods we begin with a result of Segal, that the inclusion of the space of holomorphic maps  $\Sigma \rightarrow P^n$  of degree  $d$  into the space of smooth maps induces isomorphisms in homology up to a certain degree, which tends to infinity with  $d$ . A correspon-

ding result for Grassmannians relates the Yang Mills and GIT descriptions of the moduli space. Information on the Betti numbers of the GIT quotient comes either by applying equivariant Morse theory to the norm square of the moment map (a sort of finite dimensional version of Yang Mills), or by counting points on associated varieties defined over finite fields, an approximation to the Harder Narasimhan method.

The talk concluded with tantalising hints at the development of a motivic cohomology theory (by Voevodsky and others) and its calculation for GIT quotients. In motivic homotopy theory there are two analogues to the circle in topology: 'simplicial' (affine line with 2 points identified) and 'Tate' (affine line punctured at a point), and a theory  $H^{p,q}$  is obtained, with the two gradings corresponding to the two 'circles' and with many of the standard properties of cohomology theories. These groups include Milnor's higher  $K$  groups of fields, and are equivalent to Bloch's higher Chow groups.

After the meeting a reception was held at De Morgan House, followed by the Annual Dinner at a nearby hotel.

C.T.C. Wall



## BOOK REVIEW

**Mathematics, Art, Technology and Cinema** edited by Michelle Emmer and Mirella Manaresi, Springer, 242 pp, \$99, ISBN 3-540-00601-X.

The movies haven't been too kind to mathematicians. The introduction of a mathematician as a character in a movie plot is usually a signal of impending madness, psychopathic behaviour or at least the chance to introduce a socially inept stereotype of the autistic mathematician.

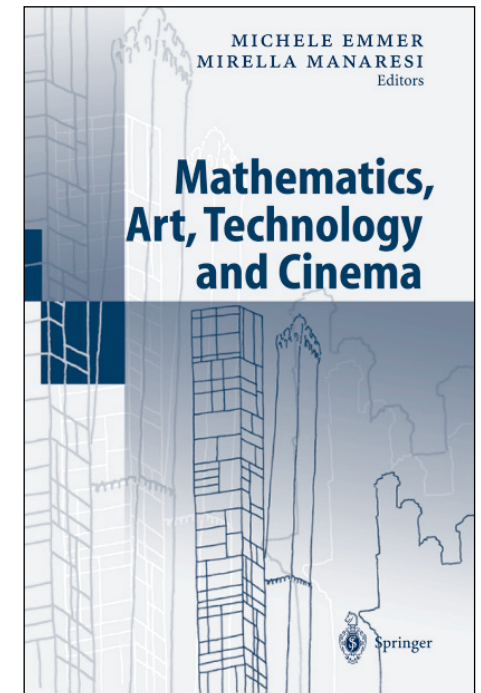
Take Jeff Bridges, Professor of Mathematics in *A Mirror Has Two Faces*. His chat-up line on his first date with the English Professor played by Barbara Streisand is a description of the twin primes conjecture. Being a mathematician he is only interested in an affair of the mind and abhors the idea of bodily contact, even when they are married. Or take Max Cohen, the hero of the film *Pi*, who gradually goes crazy in his search for patterns in the decimal expansion of pi. He is convinced the expansion contains the secret to the stock exchange together with cabalistic messages from God. By the end of the movie he takes a power drill to his brain to relieve himself of the madness of mathematics. David Auburn's Pulitzer prize-winning play *Proof* is about to hit the silver screen starring Gwyneth Paltrow and Anthony Hopkins. Again madness is synonymous with mathematician.

But if we aren't going mad then it seems that the mathematician ends up getting murdered instead. The mathematician in *Sneakers* who cracks RSA with his 'break-through of Gaussian proportions' soon gets killed off as his discovery falls into the evil hands of Ben Kingsley. In *Jurassic Park*, the expert in chaos theory (played by Jeff Goldblum) is the first to be eaten by the dinosaurs. Kathleen Turner kills her son's mathematics teacher by running over him

several times with her car, although he isn't the only victim of 'Serial Mum'.

Michelle Emmer and Mirella Manaresi's collection *Mathematics, Art, Technology and Cinema* provides a fascinating tour through some of the most recent outings of mathematicians in the movies. There is an interesting article by the Argentinean director Gustavo Mosquera describing the making of his film *Moebius*. This is an adaptation of a short story about a train that goes missing on the underground network. It transpires that the network contains a Moebius twist which accounts for the disappearance. What is fascinating is hearing how the unsettling mathematical object provides a powerful political metaphor for all those who disappeared in Argentina for political reasons.

cont'd



One of my favourite mathematical movies is *The Cube*. The movie is set in a network of cube shaped rooms. Six characters have to work their way through the network to escape the maze. However some of the rooms are booby trapped and intermittently the rooms all get permuted like some huge great Rubik's cube.

The book of essays grew out of a series of meetings that Emmer has been organizing in Italy for nearly a decade. Exploring the cultural significance of mathematics across the arts, these events have brought together an eclectic mix of people. Although the majority of talks are in Italian, several of the proceedings of the earlier meeting have been translated into English by Springer. At this year's meeting, Emmer hinted that 2006 might be the last such event. Perhaps another European country could continue the fantastic work that has been going on in Italy to provide bridges between mathematics and the other creative arts.

Marcus du Sautoy

## EUROPEAN WOMEN IN MATHEMATICS

European Women in Mathematics (EWM) is an affiliation for women bound by a common interest in the position of women in mathematics.

The founders of EWM were originally inspired by the Association for Women in Mathematics, a highly successful organisation that was set up in the USA in 1971 with the aim of encouraging women to study and to have active careers in the mathematical sciences. By the mid-1980s, a number of European women mathematicians were keen that there should be a European-based organisation for women in mathematics. Thus, at the International Congress in Berkeley in 1986, EWM came into being. Today, EWM has grown into a truly European organisation, encompassing both old and new Europe.

The main goals of EWM are:

- to encourage women to take up and continue their studies in mathematics;
- to support women with or desiring careers in research in mathematics or mathematics related fields;
- to provide a meeting place for these women;
- to foster international scientific communication among women and men in the mathematical community;
- to cooperate with groups and organizations, in Europe and elsewhere, with similar goals.

The most visible activity of EWM is the organisation of a series of European conferences. To date there have been twelve meetings including Madrid (1995), Trieste (1997), Loccum, Germany (1999), Malta (2001), Marseilles (2003) and, most recently, Volgograd, Russia.

The Volgograd meeting was held from 18-23 September 2005. Thirty-three participants from Russia, Ukraine, Belarus, Germany, Switzerland, France, Finland and Sweden attended. This was rather fewer than the organisers had hoped for but many of the lectures were also attended by students and faculty (both men and women) of Volgograd University. The meeting received financial support from the university and local authorities and was successful in achieving good reportage, with articles in the press as well as on the television and local radio. A multimedia presentation of EWM was prepared by the university's information services and was shown in the main hall of the university, thus helping to raise awareness of EWM and its activities. One of the most positive outcomes of the meeting was that it allowed a number of PhD students and recently qualified PhDs to present their work at an international meeting for the first time. Many of the speakers were also presenting their work in English for the first time. Clearly a daunting experience but

in an environment where the audience was supportive and encouraging of their efforts. In this respect, the organisers felt that the Volgograd meeting was especially useful for young women researchers.

Other EWM activities include a newsletter, which is produced approximately once a year, and an EWM email network. This is available for members to advertise positions in mathematics and to initiate discussions in areas of common interest. An archive for the email network is maintained on the web, along with minutes of the EWM General Meetings, conference reports, contact details for the regional representative, and so on. The homepage is at: [www.math.helsinki.fi/EWM](http://www.math.helsinki.fi/EWM).

The EWM head office is in the mathematics department of the University of Helsinki. In addition, there are a number of regional coordinators, who are responsible for organising activities and publicity within their country. Each country or region is free to form its own regional or national organisation, taking whatever organisational or legal form is appropriate to the local circumstances.

The UK branch of EWM currently has about 25 members, nearly all of whom work in academic institutions. It produces a newsletter twice a year and works in close collaboration with the Women in Mathematics Committee of LMS, with the UK co-ordinators serving on this committee. An example of this collaboration is the now annual Women in Mathematics Day, which was originally organised by the EWM with financial support from the LMS, but is now organised by the Women in Mathematics Committee. One of the key aims of the day is to encourage women approaching the various interfaces – undergraduate/postgraduate, PhD/postdoctoral and so on – to stay working in and interested in mathematics. Thus sessions include talks by practising women mathematicians working in a variety

of different areas and at different stages in their careers. The hope is that providing an opportunity to see women who are active and successful in mathematics, as well as to meet with them informally over lunch, will have a positive effect on those at career interfaces. Feedback from the meetings has shown that this is one of the aspects of day that participants say has made a difference to them. This year 50 participants filled the Hardy Room at De Morgan House. The morning speakers, Dr Nina Snaith, Professor Marion Scott and Dr Helen Joyce, provided a varied selection of talks on applications of random matrix theory to number theory, careers in statistics and communicating mathematics. After lunch, there was a series of shorter talks by final year PhD students and newly qualified PhDs, again covering a wide spectrum of topics in pure and applied mathematics. The final session was a discussion on mentoring. The next meeting will be held at the LMS in April 2006.

EWM, as a cross-European organisation, relies on member's subscription fees to fund its activities. The membership rates for one calendar year are: low (€1), standard (€20) and high (€50). Members decide which is the appropriate level for them. The subscriptions can go little towards the costs of running an international meeting but can go some way meeting minor expenses such as postage and also contribute to the cost of producing conference proceedings.

The next biennial EWM conference is planned for September 2007 and will be held in Cambridge. It is very much hoped that having such a prestigious and beautiful location which is easily accessible from other European countries will attract a large number of participants from many member states. It should also raise the profile of EWM and its role within the UK.

Cathy Hobbs (Oxford Brookes University)  
Jennifer Scott (Rutherford Appleton Laboratory)  
UK EWM coordinators



LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

## Department of Mathematics Chair in Financial Mathematics

Salary will be determined by the Director

Applications are invited for the post of Chair in the Mathematics Department. The appointment will be from September 2006 or as soon as possible thereafter.

The successful applicant will be a mathematician with international standing in financial mathematics. This new appointment represents a major investment by the School to expand the research activity and graduate teaching provision of the Department in the area of financial mathematics and we are looking for an outstanding scholar to lead this development.

Research activity at the LSE is centred primarily in the Social Sciences. The Department's mission is to conduct outstanding research in Mathematics within this context. Information about the Department and its current work can be found at [www.maths.lse.ac.uk](http://www.maths.lse.ac.uk).

Informal enquiries can be made to Professor Martin Anthony, [m.anthony@lse.ac.uk](mailto:m.anthony@lse.ac.uk). Further particulars and details of how to apply may be obtained from the Human Resources Division, LSE, Houghton Street, London WC2A 2AE, (telephone 020 7955 6068 or e-mail [hr.recruit.prof@lse.ac.uk](mailto:hr.recruit.prof@lse.ac.uk))

Please Quote Job Reference Number: **SA/05/01**

Closing Date for applications: **10th February 2006**

*We value diversity and wish to promote equality at all levels*

## 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](http://www.lms.ac.uk/meetings/calendar.html)).

### JANUARY 2006

- 1-31 Semi-definite Programming and Its Applications, Singapore (342)
- 4-5 Meeting in Memory of Professor Andy King, Reading University (342)
- 8-12 Dynamics and Arithmetics UK Japan Winter School, Bury St Edmunds (343)
- 9-10 Mathematics of Biomolecules Workshop, Warwick University (342)
- 9-13 Relaxation Dynamics of Macroscopic Systems Conference, INI, Cambridge (338)
- 11-14 Homotopy Theory Conference, Sheffield University (342)
- 18 Gresham College Geometry Lecture, London (343)
- 20 Yorkshire & Durham Geometry Day, Leeds University (344)
- 20 Edinburgh Mathematical Society Meeting, Edinburgh University (341)
- 23-27 Models & Methods for Human Genomics Conference, Italy (340)
- 25 Winter Combinatorics Meeting, Open University (343)

### FEBRUARY 2006

- 1 Gresham College Geometry Lecture, London (343)
- 3 Kolmogorov Lecture, Royal Holloway, University of London (344)
- 10 LMS Meeting, Mary Cartwright Lecture, London (343)
- 17 Postgraduate Open Day, King's College London (344)
- 17 Edinburgh Mathematical Society Meeting, Edinburgh University (341)
- 22 Gresham College Geometry Lecture, London (343)

26-31 Mar Random Matrix Theory, Singapore (344)

### MARCH 2006

- 13-17 3-manifolds after Perelman ICMS Workshop, Edinburgh (342)
- 17 Edinburgh Mathematical Society Meeting, Dundee University (341)
- 27-31 Mathematical Population Genetics ICMS Workshop, Edinburgh (342)
- 27-7 Apr Non Equilibrium Dynamics of Interacting Particle Systems School, INI, Cambridge (341)

### APRIL 2006

- 3-7 Number Theory & Polynomials Workshop, Bristol University (344)
- 3-7 Jordan Structures in Analysis & Geometry Conference, Taiwan (342)
- 10-13 BMC, Newcastle University (344)
- 10-13 New Directions in Proof Complexity Workshop, INI, Cambridge (343)
- 11-13 Mathematical Education of Engineers IMA Conference, Loughborough University (342)
- 24-27 BAMC, Keele University (343)
- 28 Edinburgh Mathematical Society Meeting, Aberdeen University (341)

### MAY 2006

- 1-30 Jun Random Graphs and Large Scale Real World Networks, Singapore (343)
- 2 Gresham College Geometry Lecture, City of London School, London (343)
- 8-19 Combinatorics, Automata & Number Theory Conference, Liège University, Belgium (339)
- 26 Edinburgh Mathematical Society Meeting, St Andrews University (341)

### JUNE 2006

- 1-30 Jul Algorithmic Biology, Singapore (344)
- 6-30 First Passage & Extreme Value Problems in Random Processes Conference, INI, Cambridge (340)

MICHAEL FRANCIS ATIYAH  
DE MORGAN MEDALLIST  
1980



Extract from the citation: 'Atiyah's extensive mathematical knowledge and keen insight have enabled him to found productive new theories and to reveal deep seated connexions and analogies between diverse branches of mathematics. He has made important contributions to algebraic geometry, to differential geometry and topology, to the theory of group representations and to that of partial differen-

tial equations. His work in algebraic geometry continued the tradition of Baker, Hodge and Todd. Together with Hirzebruch he developed K theory. He found, in joint work with Singer, an important result concerning elliptic partial differential equations, the Index Theorem, generalising the Riemann Roch theorem. Recently he has investigated certain geometric objects, *instantons*, introduced by physicists.'