

# THE LONDON MATHEMATICAL SOCIETY



## NEWSLETTER

No. 388 January 2010

### Society Meetings and Events

#### 2010

**Friday 26 February**  
Mary Cartwright  
Lecture, Durham  
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**Wednesday 14 April**  
Northern Regional  
Meeting, Newcastle

**Monday 21 June**  
SW & South Wales  
Regional Meeting  
Cardiff

**Friday 2 July**  
Hardy Lecture  
London

**Monday 13 September**  
Midlands Regional  
Meeting, Nottingham

**Friday 19 November**  
Annual General  
Meeting and Naylor  
Lecture, London

### COUNCIL MEETING

20 November 2009

The future assessment of mathematics research, the teaching of undergraduate mathematics, and how the LMS works with its members were the focus of November's Council meeting.

Through the CMS (Council for Mathematical Sciences), the LMS is responding to a consultation by HEFCE (the Higher Education Funding Council for England) on the forthcoming Research Excellence Framework (REF). The most contentious part of HEFCE's proposals is the inclusion of 'impact' in the assessment. Council agreed that CMS should respond by arguing that the definition of 'impact' should be broadened, in line with Research Council definitions, to include academic and scientific impact, particularly since advances in the mathematical sciences are often exploited by other academic fields. Council was concerned about the intrinsic difficulty of measuring 'impact' (not just in the mathematical sciences), and CMS will be recommending a reduction in weighting of 'impact' in the final REF results. HEFCE's proposal to move to a single assessment panel for the mathematical sciences was welcomed as a positive step.

Many members who are involved in teaching and examining undergraduate mathematics will, at some time, have faced issues with degree classification, students with failed modules, and the removal of blackboards from lecture theatres. To support colleagues in HE departments, Council approved a position statement drafted by the Education Committee, addressing these matters, with reference to the relevant subject benchmarks. It is hoped that this document will provide useful ammunition for members in discussions within their own institutions, and for explaining to non-mathematical colleagues some of the distinctive features of the teaching and assessment of mathematics degrees. This document will be circulated to Heads of Department soon.

One positive outcome of the discussions about the future of the LMS over the past year has been the greater interest and involvement of members in the affairs of the Society. To build on this, Council set up a working group on membership, which will include non-Council members, and act as a champion for membership issues. Key issues for this group include a membership drive and improving communications. The Society's website needs

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urgent improvement, and the group will be investigating the sort of information and functionality which members want from the new website. The working group will be asking you for your opinions!

Council closed by thanking those retiring Officers and members-at-large for their service to the Society. Particular thanks were expressed to Sir John Ball for his careful leadership of the Society through difficult times; to Peter Cooper for his tireless and invaluable work as Executive Secretary for the past seven years; and to Martin Smith, who has provided great support to both CMS and Council.

Elizabeth Winstanley

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## CHANGES TO BY-LAWS

Council has proposed changes to the By-laws of the Society. These address four matters:

1. To enable an incoming President to be put forward for election by the membership to the post of President-Elect in the November elections a year ahead of the retirement of his or her predecessor; the President-Elect would then serve as a full member of Council for the year prior to election to the office of President.

2. To require that the nominations put forward by Nominating Committee should be publicised to the membership a month in advance of the deadline so that members may put forward any further nominations in the knowledge of Nominating Committee's proposals.

3. To remove the restriction that Honorary Members may not vote on matters of the Society's business, noting that several Honorary Members had previously been Ordinary Members and it was invidious to remove the right of voting from them on the award of Honorary Membership.

4. To clarify the position of members who

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are appointed as the Representative of an Institutional Member.

Further details of the proposed changes will be found on a separate leaflet sent with this *Newsletter*.

The proposals will be considered at a Special General Meeting to be held at 3:30 pm on Friday 26 February 2010 at the Mary Cartwright Lecture in the Arthur Holmes Lecture Theatre, University of Durham.

Ivor Goddard  
Executive Secretary

## PRIZES DEADLINES

Readers are reminded that the deadline for receipt of nominations for the 2010 Society Prizes is **Friday 22 January 2010**. Prizes available in 2010 include the *De Morgan Medal*, *Senior Berwick Prize*, *Fröhlich Prize* and up to four *Whitehead Prizes*. A nomination form can be downloaded from [www.lms.ac.uk](http://www.lms.ac.uk). For full details of all these prizes please see the Society's November *Newsletter* (No. 386) or email [prizes@lms.ac.uk](mailto:prizes@lms.ac.uk).

## LONDON MATHEMATICAL SOCIETY MARY CARTWRIGHT MEETING

**Friday 26 February 2010**

**Arthur Holmes Lecture Theatre, University of Durham**

**3.30** Opening of the Meeting  
Special General Meeting

**Ana Achúcarro** (Leiden)  
Title TBC

**4.30** Tea

**5.00** **Mary Cartwright Lecture**

**Ruth Gregory** (Durham)  
*Fun with extra dimensions*

A dinner will be held after the meeting. Contact Isabelle Robinson ([isabelle.robinson@lms.ac.uk](mailto:isabelle.robinson@lms.ac.uk)) for further information.

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Contact Duncan Turton ([womeninmaths@lms.ac.uk](mailto:womeninmaths@lms.ac.uk)) for further information.

## EXECUTIVE SECRETARY

*The London  
Mathematical  
Society*



The London Mathematical Society (LMS) is searching for a new Executive Secretary to start in May 2010, or soon thereafter, following the resignation of Peter Cooper.

The LMS is the foremost British learned society for mathematics, and is a registered charity. It has over 2,600 members worldwide. It is also a major mathematical publisher.

The Executive Secretary runs the LMS under the direction of Council and its honorary officers. The Society operates from De Morgan House, 57–58 Russell Square, which it owns. At present there are 19 members of staff including the Publisher.

Candidates should have an empathy with the ideals of mathematical research, and develop an understanding of the concerns of the membership. They should have excellent presentation skills, and be able to promote the aims of the Society knowledgeably and enthusiastically. Candidates should have experience of successfully managing staff and finances and the ability and experience to take responsibility for the Society's compliance with charity, employment, tax and H&S law.

The employment will initially be for a term of three years and subject to probation. The salary will be commensurate to the role and is expected to be no lower than the professorial range, plus London Allowance. USS membership is available to the successful candidate.

The deadline for applications, which should include a CV and full contact details of two referees, is **Monday 18 January 2010**. Further particulars are available at [www.lms.ac.uk](http://www.lms.ac.uk) or [www.odgers.com/29987](http://www.odgers.com/29987). Please apply online, by email to [29987@odgers.com](mailto:29987@odgers.com) or by post to NFP Response Manager, Odgers Berndtson, 11 Hanover Square, London W1S 1JJ quoting reference SCO/29987.

Candidates are encouraged to make informal enquiries to our consultants Odgers Berndtson: Samantha Colt (Principal Consultant) on 020 7529 6357.



## PETER COOPER

### An appreciation

Peter Cooper joined the London Mathematical Society as Executive Secretary in 2002, being the first full-time incumbent of the post. For some 25 years, Susan Oakes had been the Administrator of the LMS but, as its responsibilities and interests grew, especially after the purchase of and move to De Morgan House, it became necessary to have an Executive Secretary with a 'Civil Servant' type of responsibility for all, or most of, LMS activities. Peter Cooper was the first professional scientific administrator in that position. He built upon the fine work done both by his predecessor, Ben Garling, who was part-time only, and by Susan Oakes, the Administrator, with whom he continued to work happily in tandem for some years until Susan retired.

Peter came to the LMS from previous positions at the Royal Society and at the Institute of Physics, and thus had a wide experience of the scientific world, of interactions with the Government, with the Research Councils, with Industry, with Europe, and with international organisations. He is well-known and respected by senior staff in other scientific organizations. This experience, and the respect of others in similar positions, stood him in very good stead and has been of great benefit to the LMS and to the Mathematics community generally.

Some of us might ask: 'What does the Executive Secretary do?' Here is an answer. From the time of his appointment Peter Cooper was charged by the Council with managing on its behalf all of the activities in which the LMS was involved; these included [i] the role of the LMS as a leading learned society for mathematics, and its relationships with other UK mathematical societies and with the Council for the Mathematical Sciences; [ii] supervision of De Morgan House, its relations with tenants and the development of conference activities, [iii] investment of financial reserves, in association with the Honorary Treasurer, and the management of regular 'routine' financial affairs,



including the cycle of planning, budgeting, implementation and monitoring, a large part of the income coming from Publishing, [iv] an oversight of Publishing, but in association with the Publisher, Susan Hezlet, [v] the management of staff, their conditions of service and pension schemes, [vi] relations with the Inland Revenue, the Charity Commission and with the Privy Council, [vii] interactions with the Government on mathematical teaching [with HEFCE, for example, and ACME] and through EPSRC (particularly) on research, [viii] international relations with, for example, the IMU and overseas mathematical societies, and the International Review of Mathematics, [ix] the award of Prizes by the LMS and the nomination of candidates for international prizes, [x] Mathematics policy and its promotion, in which he played a very supportive role. In all of these multifarious responsibilities he was a good 'Civil Servant', acting with absolute integrity on the instructions of the President, Officers and Council of the Society, but supplying an innovative input when appropriate. Indeed he brought a very good professional administrator's insights into all this work and he brought new and broader visions to the LMS.

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Two particular changes stand out, however: [a] the development of a Conference Suite in De Morgan House; [b] the development of a group structure for the staff within LMS, with the associated benefit of definite career patterns for them. These changes have been very beneficial, indeed revolutionary, as many recognise.

In response to my request for advice, several Members of Council, Members of the LMS, and Members of Staff have written to me, for which I am very grateful, although I emphasize that the writing in this appreciation is my responsibility. Universally there is recognition of the great devotion which Peter has shown to the LMS and to its role in the Mathematical world; he has worked hard and effectively from early in the morning until late at night, always being willing to discuss matters of pressing importance at any time. It was almost as if the LMS and Mathematics had become an integral part of his life. Peter's wife, Moira, has been a tremendous support to him during his time at the LMS, enabling him to pursue his work at all hours; she thoroughly deserves our heartfelt thanks.

It is clear, as many have said to me, that Peter Cooper will be sorely missed by Staff of the Society on a daily basis, by Members of Council quite regularly and by Members of the Society. His resignation is a tremendous blow for the Society and for the Staff coming, as it did, hard upon resignations of Officers from the Council. Peter Cooper's departure leaves a gap which we feel with great regret. We wish him, and Moira, well for the future.

Trevor Stuart  
Imperial College London  
LMS President 2000–02

### A Note of Thanks from the Staff

Trevor Stuart's article gives a welcome opportunity for members of LMS staff with whom Peter Cooper has worked to provide an ad-

ditional perspective from our experience of working with him here in De Morgan House.

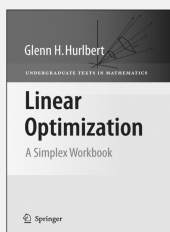
Peter has been a source of inspiration and guidance to the Society's staff throughout the last seven years. His detailed knowledge of the Society's operations is often astonishing, and is only outdone by his ability to grasp quickly the crux of an issue and find a workable solution – a true mathematical trait that many of us envy. Even in the most difficult of circumstances Peter has kept the Society and its staff functioning – from leaking pipes to legal issues, Peter has kept us on course.

Peter's dedication to his job is well known, responding to emails on an almost 24-hour basis. As a manager, Peter's boundless energy and quest for perfection have ensured that staff work to their full potential, and he always makes time to listen to staff concerns. He is quick to acknowledge good work and to develop individuals' skills by offering new opportunities to those who showed an interest. His experience in working in the administration of learned societies has helped us all to navigate the challenges that supporting the work of the Society entail.

Peter's notable contributions are many, but an article such as this cannot fail to mention his hand in pursuing the bid to HEFCE for the £3.3M More Maths Grads project – a bid that brought the mathematical sciences societies together for the benefit of the subject and secured the position of mathematics alongside physics and chemistry in the eyes of the Funding Councils. His unique blend of experience and vision have enabled other Society activities, such as the Council for the Mathematical Sciences and the Mathematics Promotion Unit, to become established and flourishing features on the mathematics policy landscape. Through our contacts outside the Society, it is clear that the Society's influence and the profile of mathematics have both increased during Peter's time at the LMS.

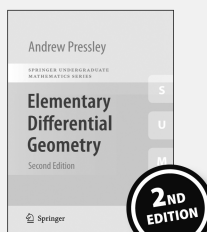
Peter will be greatly missed at De Morgan House and we wish him well for the future.

## Highlights in Springer's eBook Collection



This undergraduate textbook is written for a junior/senior level course on linear optimization. Unlike other texts, the treatment follows the "modified Moore method" approach in which examples and proof opportunities are worked into the text.

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### 2009–10 COUNCIL

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

<b>President</b>	Professor A.J. Macintyre, FRS, FRSE (Queen Mary, University of London)
<b>Vice-Presidents</b>	Professor K.A. Brown, FRSE (Glasgow) Professor J.P.C. Greenlees (Sheffield) Dr W.B. Stewart (Oxford)
<b>Treasurer</b>	Professor J.M.E. Hyland (Cambridge)
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<b>Programme Secretary</b>	Professor J.D.S. Jones (Warwick)
<b>Publications Secretary</b>	Professor C.J. Budd (Bath)
<b>Education Secretary</b>	Dr J.E. Barrow-Green (Open University) (Librarian)
<b>Members-at-Large</b>	* Professor A.V. Borovik (Manchester) * Dr D.E. Buck (Imperial College London) Professor S.N. Chandler-Wilde (Reading) (1-year term) * Professor H.G. Dales (Leeds) Professor S.K. Donaldson, FRS (Imperial College, London) Professor A. Laptev (Imperial College London) Professor G.B. Segal, FRS (Oxford) * Professor U.L. Tillmann, FRS (Oxford) Professor B.J. Totaro, FRS (Cambridge) Professor R.A. Wilson (Queen Mary, University of London) * Professor A.J. Wilkie, FRS (Oxford)

\* Members continuing the second year of their two-year election in 2008

### ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

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 theoretical aspects of any discipline.

At any time there are two visitor programmes in progress, each with about twenty scientists in residence. Included within these programmes are periods of particularly intense activity including instructional courses and workshops. Eighty-two programmes have now been completed, the most recent being *The Cardiac Physiome Project*. The programmes currently taking place are *Dynamics of Discs*

and *Planets* and *Non-Abelian Fundamental Groups in Arithmetic Geometry*. The Institute also holds short follow-up events some years after a programme.

The Institute invites proposals for research programmes in any branch of mathematics or the mathematical sciences. The Scientific Steering Committee usually meets twice each year to consider proposals for programmes (of 4-week, 4-month or 6-month duration) to run two or three years later. Proposals to be considered at these meetings should be submitted by **31 January** or **31 July** respectively. Further information is also available at [www.newton.cam.ac.uk/call-prop.html](http://www.newton.cam.ac.uk/call-prop.html). Proposals should be sent to Sir David Wallace, CBE, FRS, FREng, The Director, Isaac Newton Institute for Mathematical Sciences, 20 Clarkson Road, Cambridge CB3 0EH.

## ANNUAL LMS SUBSCRIPTION 2009/10

May we remind those who have not yet paid their subscription for 2009/10 that payments were due on 1 November 2009. The Society reserves the right to discontinue the supply of periodicals and the *Newsletter* to members whose subscription remains unpaid by **31 January 2010**. Those members who already have a Direct Debit set up will have payment taken on 15 January 2010.

Members can pay their subscription by UK£ cheque, US\$ cheque, direct debit or credit card. It is our preference that members who have a UK bank account should pay by direct debit. If you have misplaced your subscription form, you can download a copy from the LMS website ([www.lms.ac.uk/contact/subscriptions.html](http://www.lms.ac.uk/contact/subscriptions.html)) or contact the LMS office (email: [membership@lms.ac.uk](mailto:membership@lms.ac.uk); tel: 020 7291 9972/9977).

### Individual members 2009/10 rates:

LMS membership subscription:				£	US\$	
Ordinary membership				49.00		98.00
Concessionary rates on Ordinary membership:						
– Reciprocity agreement with another mathematical Society <sup>+</sup>				24.50		49.00
– Career break or part-time working*				12.50		25.00
Associate membership				12.50		25.00
LMS journals and publications:	Print only		Online only*		Print & online*	
	£	US\$	£	US\$	£	US\$
<i>Bulletin</i>	51.00	102.00	41.00	82.00	61.00	122.00
<i>Journal</i>	97.00	194.00	78.00	156.00	116.00	232.00
<i>Proceedings</i>	97.00	194.00	78.00	156.00	116.00	232.00
<i>Nonlinearity</i>	(except North America)		(North America)			
	£69.00		£89.00		US\$178.00	
JCM (electronic)	Free					
European Mathematical Society subscription				£22.00		US\$44.00
Journal of the European Mathematical Society (only available if taking an EMS subscription)				£68.00		US\$136.00

+ Reciprocity rates are available to members of certain overseas countries who are not resident in the UK.

\* Concessions are available to members who have returned to full-time education, are on a career break or in part-time working, or are unemployed or otherwise in hardship and wish to suspend their membership. Contact [membership@lms.ac.uk](mailto:membership@lms.ac.uk) to enquire further.



Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

### Professor of Mathematics

The Department of Mathematics at ETH Zurich ([www.math.ethz.ch](http://www.math.ethz.ch)) invites applications for a faculty position in mathematics. Applications in the fields of algebra and topology are particularly welcome. We are looking for candidates with an outstanding research record and a proven ability to direct research work of high quality. Willingness to teach at all university levels and to participate in collaborative work both within and outside of ETH Zurich is expected.

In association with other members of the Department, the future professor will be responsible for teaching mathematics courses for students of mathematics, natural sciences and engineering. He or she will be expected to teach undergraduate level courses (German or English) and graduate level courses (English).

Please submit your application together with a curriculum vitae, a list of publications, the names of at least three referees, and a short overview of the research interests to the **President of ETH Zurich, Prof. Dr. Ralph Eichler, Raemistrasse 101, ETH Zurich, 8092 Zurich, Switzerland, (or via e-mail to [faculty-recruiting@sl.ethz.ch](mailto:faculty-recruiting@sl.ethz.ch)), no later than April 15, 2010.** With a view toward increasing the number of female professors, ETH Zurich specifically encourages qualified female candidates to apply.

## LMS GRANT SCHEMES

Readers are reminded of the Society's Schemes to provide grants for the following activities:

- Conferences and postgraduate research conferences held in the UK (Schemes 1 and 8)
- Visitors to the UK (Scheme 2)
- Support of joint research groups (Scheme 3)
- Collaborative small grants (Scheme 4)
- International short visits with the main focus on Africa (Scheme 5)

The next deadline for receipt of applications for the above grant schemes is **31 January 2010** and these will be considered at a meeting in February. Applications should be submitted well in advance of the date of the event for which funding is requested. Normally grants are not made for events which have already happened or where insufficient time has been allowed for processing of the application.

For full details of these Schemes please see the Society's website ([www.lms.ac.uk/grants](http://www.lms.ac.uk/grants)). Queries regarding applications can be addressed to the Programme Secretary, Stephen Huggett (tel: 01752 586869, email: [s.huggett@plymouth.ac.uk](mailto:s.huggett@plymouth.ac.uk)) or the Grants Administrator, Sylvia Daly (tel: 020 7291 9971, email: [sylvia.daly@lms.ac.uk](mailto:sylvia.daly@lms.ac.uk), Wednesday–Friday) who will be pleased to discuss proposals informally with potential applicants and give advice on the submission of an application.

Examples of the types of conferences which have been supported in the past year are *Algebraic and Arithmetic Geometry of Higher-Dimensional Varieties* (Bristol), *Variational and Topological Methods and Water Waves* (Bath) and *Aperiodic Order Workshop* (Leicester).

The newly introduced grant scheme for postgraduate conferences (Scheme 8) was set up to encourage students to be involved in the Society. In its first year it helped to fund the following conferences: *The Postgraduate Group Theory Conference 2009* (Manchester),

*The 20th Postgraduate Combinatorial Conference 2009* (Royal Holloway) and *The 3rd European Postgraduate Fluid Dynamics Conference* (Nottingham).

Under the visitor schemes we have supported visits from countries as far a field as Japan, Jamaica, Israel and New Zealand (Scheme 2), visits to and from Ghana (Scheme 5), and collaborative research between mathematicians in Aberdeen and Singapore, and Bath and Japan (Scheme 4).

**Information on other grant schemes operated by the Society**, for education, the mathematics-computer science interface, and childcare, is also available at [www.lms.ac.uk/grants](http://www.lms.ac.uk/grants).

## INTERNATIONAL CONGRESS OF MATHEMATICIANS 2010

### LMS travel grants

The London Mathematical Society has set aside funds to be used for making grants to support the attendance of UK-based mathematicians at the ICM in Hyderabad from 19 to 27 August 2010 ([www.icm2010.org.in](http://www.icm2010.org.in)). The Society would particularly like to support those mathematicians at an early stage in their career, including postdocs. You do not need to be an LMS member to apply.

Those who are eligible to apply to the Royal Society for an International Travel Grant ([www.royalsociety.org/funding](http://www.royalsociety.org/funding)) are first expected to do so. Those who are not eligible for a Royal Society grant, or were unsuccessful in obtaining one, can apply to the London Mathematical Society for a grant to contribute to the costs of attending the ICM. Please contact Isabelle Robinson for an application form ([isabelle.robinson@lms.ac.uk](mailto:isabelle.robinson@lms.ac.uk), tel. 020 7291 9977) or download one from the LMS website ([www.lms.ac.uk](http://www.lms.ac.uk)). Applications should be submitted by **19 March 2010** and applicants will be informed of the outcome by mid-April.

### Cecil King Travel Scholarship

The London  
Mathematical  
Society



The London Mathematical Society annually awards a £5000 Cecil King Travel Scholarship in Mathematics to a young mathematician of outstanding promise. The Scholarship is awarded to support a period of study or research abroad, typically for a period of three months.

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. A shortlist of applicants will be selected for interview.

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

Applications should be made using the form 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 by contacting [education@lms.ac.uk](mailto:education@lms.ac.uk). The closing date for applications is **Friday 19 February 2010**. It is expected that interviews will take place in London in late April or early May.

*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.*

### MATHEMATICS POLICY ROUND-UP

#### Research Excellence Framework

In December, the Council for the Mathematical Sciences (CMS) responded to the second consultation from the Higher Education Funding Council for England (HEFCE) on the proposed Research Excellence Framework. It welcomed HEFCE's change in approach to the use of bibliometrics for research assessment and the proposal that in-

dividual panels should be allowed to decide independently whether or how to use bibliometrics. The response noted that mathematical sciences were high-impact subjects, but argued that the methodology proposed for assessing impact was not robust enough and that the weighting for this portion of the assessment should be substantially lower than the proposed 25%. A combined Unit



of Assessment for mathematical sciences – consolidating Pure Mathematics, Applied Mathematics and Statistics and Operational Research – was felt to be the most meaningful combination of subjects given the need to decrease the number of Units overall, but the size of the panel itself should be much larger than proposed to account for the breadth of these subjects and the need to read all outputs. To view the response visit [www.cms.ac.uk/submissions.html](http://www.cms.ac.uk/submissions.html).

#### **Council for the Mathematical Sciences review**

After a three-year period the Council for the Mathematical Sciences undertook a review of its work and structure at a meeting held on 21 October. The Founder Members (the LMS, IMA and RSS) and the two recent members (the Edinburgh Mathematical Society and the Operational Research Society) were all very pleased with the contribution that the CMS had delivered, noting that the status of the Council was based on the participation of the member societies and that full engagement from each organisation was crucial to forming well-rounded policy responses. It was observed that the Council's strength lay in policy submissions relating to Higher Education issues and it agreed to concentrate its activities here, operating as a policy body rather than running activities itself. Relationship-building with EPSRC had been an important part of CMS work over the last few years, alongside regular meetings with HEFCE and others, and the list of policy submissions to Research Councils, Government, Select Committees and others was considerable. See the website at [www.cms.ac.uk](http://www.cms.ac.uk).

#### **Teacher recruitment exceeds targets – even in maths**

The Training and Development Agency for Schools has announced that, for the first time, it has exceeded government targets

for teacher training recruitment – even in mathematics. Its 'bumper' year saw an increase of 8% over the target set for 2009/10, with 2,897 new trainee mathematics teachers. Overall, recruitment to priority subjects was up 17%. Graham Holley, Chief Executive of the TDA said "In meeting all of our Initial Teacher Training targets in every subject area and phase for the first time ever, we have reached a significant milestone in teacher recruitment. Considering that we have not met the challenging Maths target alone before, this is a monumental achievement." He added that the recession had played a part in these results. The TDA has also announced changes to the level of bursaries it will offer trainee teachers from 2010/11. Trainee mathematics teachers will continue to receive £9,000 bursaries as will others training in subjects including chemistry and physics. But trainees in subjects such as biology, modern languages and music will receive only £6,000 and others in subjects including physical education, history and 'smaller-sized secondary subjects' will be offered just £4,000. Visit the website at [www.tda.gov.uk](http://www.tda.gov.uk).

#### **Applications to study mathematics up**

The number of students accepted onto university courses to study mathematical sciences (G1 courses) at UK universities rose by 7.6% this year, according to provisional figures released by UCAS. A total of 6,908 students have accepted places making mathematical sciences the 20th most popular choice of subject. Other subjects which saw significant gains included nursing (up 20%) and journalism (up 15.7%), whilst management studies, biology and combined languages saw decreases in acceptance rates. See [wwwucas.com/about\\_us/media\\_enquiries/media\\_releases/2009/2009-10-21](http://wwwucas.com/about_us/media_enquiries/media_releases/2009/2009-10-21).

Caroline Davis  
Mathematics Policy and Promotion Officer

# ICIAM 2011



14

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THE LONDON MATHEMATICAL SOCIETY  
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Tuesday 4 May 2010  
6pm at the Museum of London, Barbican

# Indra's Pearls: Geometry and Symmetry

Professor Caroline Series  
University of Warwick

A Buddhist myth describes the heaven of Indra as containing a net of pearls, each of which was reflected in its neighbour, so that the whole Universe was mirrored in each pearl. Join Caroline Series on the path from basic mathematical ideas to simple algorithms whose repetition creates delicate fractal filigrees which are only now beginning to be fully explored.

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# THE LONDON MATHEMATICAL SOCIETY

## NEWSLETTER

### 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.

17 Mar 1943	Dyson, F.J.	15 Dec 1955	Armitage, J.V.
15 Jun 1944	Williams, A.E.	15 Dec 1955	Butler, M.C.R.
25 Jan 1945	Ollerenshaw, K.	19 Jan 1956	Bowers, J.F.
23 May 1946	Huppert, E.L.	15 Mar 1956	Edmunds, D.E.
23 May 1946	Rees, D.	15 Mar 1956	Horrocks, G.
16 Jan 1947	Macbeath, A.M.	19 Apr 1956	Penrose, R.
20 Mar 1947	Hayman, W.K.	14 Jun 1956	Perry, R.L.
22 May 1947	Ghaffari, A.	14 Jun 1956	Noble, M.E.
19 Jun 1947	Cassels, J.W.S.	14 Jun 1956	Collins, W.D.
27 Nov 1947	Hilton, P.J.	15 Nov 1956	Edwards, D.A.
18 Mar 1948	Isaacs, G.L.	14 Mar 1957	Dunnage, J.E.A.
18 Mar 1948	Reade, M.O.	14 Mar 1957	Brown, R.
17 Jun 1948	Bateman, P.T.	13 Jun 1957	Brown, A.L.
18 Nov 1948	Mullender, P.	18 Jun 1957	Russell, D.C.
13 Dec 1948	Fishel, B.	21 Nov 1957	Wallington, J.E.
20 Jan 1949	Borwein, D.	19 Dec 1957	Adamson, I.T.A.C.
17 Mar 1949	Kilmister, C.W.	19 Dec 1957	Divinsky, N.J.
19 Jan 1950	Shepherdson, J.C.	19 Dec 1957	Everitt, W.N.
16 Feb 1950	Lehner, J.	19 Dec 1957	Longdon, L.W.
23 Mar 1950	Ponting, F.W.	19 Dec 1957	Mohamed, I.J.
14 Dec 1950	Patterson, E.M.	19 Dec 1957	Monk, D.
19 Apr 1951	Chen, D.L.C.	19 Dec 1957	Moran, S.
17 May 1951	Roth, K.F.	19 Dec 1957	Newman, M.F.
14 Jun 1951	Jackson, M.	19 Dec 1957	Schneider, H.
20 Dec 1951	Herszberg, J.	16 Jan 1958	Flanders, H.
20 Dec 1951	Dowker, Y.N.	20 Feb 1958	Clunie, J.G.
17 Jan 1952	Wilson, D.H.	20 Feb 1958	Kovari, T.
15 Feb 1952	Shephard, G.C.	20 Mar 1958	Keedwell, A.D.
20 Mar 1952	Bonsall, F.F.	20 Mar 1958	Wallace, D.A.R.
20 Mar 1952	Swinnerton-Dyer, H.P.F.	17 Apr 1958	Macdonald, I.G.
20 Nov 1952	Knight, A.J.	15 May 1958	Foster, D.M.E.
18 Dec 1952	Reeve, J.E.	19 Jun 1958	Green, J.A.
18 Jun 1953	Rayner, M.E.	20 Nov 1958	Rigby, J.F.
18 Jun 1953	Marstrand, J.M.	17 Dec 1958	De Barra, G.
17 Dec 1953	Ringrose, J.R.	18 Dec 1958	Birch, B.J.
17 Dec 1953	Samet, P.A.	18 Dec 1958	Hallett, J.T.
21 Jan 1954	Zeeman, E.C.	18 Dec 1958	Higgins, P.J.
18 Feb 1954	Cohen, D.E.	18 Dec 1958	McLeod, J.B.
18 Feb 1954	James, I.M.	18 Dec 1958	Miller, J.B.
17 Jun 1954	Taylor, S.J.	15 Jan 1959	Blackburn, N.
25 Nov 1954	Amson, J.C.	19 Mar 1959	Wort, R.
25 Nov 1954	Halberstam, H.	16 Apr 1959	Burgess, D.A.
16 Dec 1954	Preston, G.B.	16 Apr 1959	Manogue, J.F.
27 Jan 1955	Atiyah, M.F.	21 May 1959	Ingram, G.
24 Feb 1955	Rayner, F.J.	18 Jun 1959	Carter, R.W.
24 Mar 1955	Farahat, H.K.	17 Dec 1959	Eames, W.P.
12 May 1955	Murdoch, B.H.	17 Dec 1959	Hoskins, R.F.
12 May 1955	Wall, G.E.	17 Dec 1959	Porteous, I.R.
12 May 1955	Harrop, R.	17 Dec 1959	West, A.

## JOHN HALL

Dr John A.P. Hall, who was elected a member of the London Mathematical Society on 19 December 1957, died on 24 August 2008, aged 90.

John Hall played a leading role in the development of computer science education in the UK. He helped to provide one of the first undergraduate courses in computer science in 1965, leading to the installation of the first multi-access computer system in education and eventually to the creation of the best equipped computer centre in public sector education. He became assistant director (academic) at Hatfield Polytechnic (later the University of Hertfordshire) in 1969, and sat on Hertfordshire County Council Education Committee for many years, facilitating the development of teacher education, the study of astronomy and the introduction of computer education in local schools. John Hall was a significant and early contributor to the work of the Council for National Academic Awards (CNAA), in 1979 becoming its assistant chief officer, responsible for science and mathematics degrees and courses across the institutions within the CNAA remit. After retirement in 1992, he was awarded an honorary doctorate.

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## SHAUN WYLIE

Shaun Wylie, born on 17 January 1913 in Oxford, became an outstandingly effective Cambridge don, and subsequent code breaker at Bletchley Park. He was recruited to Bletchley Park by Alan Turing in February 1941 and worked there in Turing's section, Hut 8. He was one of the great successes in working on the Germany navy's Enigma encryption devices, and became head of the crib section. Wylie later stated that "The breaking of the Enigma machine

ciphers is invariably cited as the outstanding achievement of the BP code breakers. But the breaking of the German enciphered teleprinter traffic was far greater."

After the war, Wylie went to Trinity Hall, Cambridge, where he was a Fellow. He worked with Peter Hilton – with whom he had worked closely at Bletchley Park – to produce a massive volume *Homology Theory: An Introduction to Algebraic Topology* (1960) published by Cambridge University Press. Later he became chief mathematician at GCHQ, the UK signals intelligence organisation, another secret enterprise.

After retiring in 1973 he taught at the Hills Road Sixth Form College in Cambridge and died on 2 October 2009. His wife Odette, who also had been a distinguished worker at Bletchley Park, predeceased him.

Peter Hilton  
Professor Emeritus  
SUNY Binghamton, Binghamton, NY

## LONDON TAUGHT COURSE CENTRE

The London Taught Course Centre (LTCC) offers a programme of taught courses to foster the training of doctoral research students in the Mathematical Sciences which run every Monday during term-time, as well as short intensive courses during the summer. The courses are open to PhD students in the UK and beyond and cover the areas of Statistics, Applied and Pure Mathematics and are taught by leading practitioners from the institutions in the LTCC consortium: UCL, Queen Mary, Imperial College, King's College, LSE, City, Kent and Brunel.

The courses are free but registration is essential. For registration details contact Nisha Jones at [office@ltcc.ac.uk](mailto:office@ltcc.ac.uk) or visit the LTCC website at [www.ltcc.ac.uk](http://www.ltcc.ac.uk).

## NEWS FROM THE MATHEMATICAL SCIENCES PROGRAMME AT EPSRC

### International Review of Mathematical Sciences 2010

EPSRC is organising an International Review of Mathematical Sciences which will take place in December 2010. The review will:

- assess and compare the quality of the UK research base in the Mathematical Sciences with the rest of the world
- assess the impact of the research base activities in the Mathematical Sciences internationally and on other disciplines nationally, on wealth creation and quality of life
- comment on progress since the 2004 International Review

The international panel will be chaired by Professor Margaret H. Wright, New York University. The online form for nominations for the other international panel members will be open from 14 December 2009 until 5 February 2010. Heads of Department and other stakeholders will be sent a link to the form in due course. The international panel will be chosen from the list of nominees by a UK Steering Committee chaired by Professor Tim Pedley and including representatives from the LMS (Sir John Ball, FRS), the EMS (Professor Ken Brown), the ORS (Professor Lyn Thomas), the RSS (Professor Peter Green), the IMA (Professor David Abrahams) and the IMKTN (Dr Robert Leese).

The review will take place from 6 to 10 December 2010. It is planned that the panel will divide and visit a number of host universities where other universities and key industry counterparts will be represented – i.e. a very similar format to the 2004 International Review. Unfortunately due to logistical reasons not all institutions can be met by the panel. There will be a briefing meeting for institutions to be met by the panel on the 19 May 2010; invitations to this event will be sent out in due course.

### Centres for Doctoral Training

EPSRC is to fund three Centres for Doctoral Training in the Mathematical Sciences (CDT); the £13 million investment will support centres at the Universities of Cambridge, Lancaster and Warwick. This funding is in addition to the £250 million initiative to create 44 training centres across the UK that was announced in December 2008.

The Mathematical Sciences underpin a wide range of other disciplines, applications and industry. The CDTs will have close links to these, leading to a generation of highly employable researchers who will contribute to the long term scientific, technological and economic health of the UK.

Each centre will train 40 students over a period of seven years. In addition to undertaking a challenging and original research project at PhD level the students will receive a formal programme of taught coursework to broaden their skills set and enhance their technical and interdisciplinary knowledge.

### Maths of Life Sandpit

The *Maths of Life* project is an initiative of the Cross-Disciplinary Interfaces and Mathematical Sciences programmes, which begun in early 2009 as a development of several activities undertaken in previous years under the heading of 'New Maths for Biology'. The aim of the project was to encourage the development of new interactions between Mathematics and the Life and Social Sciences. The first event of the project was a Scoping workshop held in April 2009. During this one-day workshop, participants were invited to suggest topics for the sandpit that was to be held at a later stage. Together with Oliver Jensen (Director of the Sandpit), the topic *Evolutionary Processes* was chosen, since

it was agreed that it was at the same time broad and adventurous enough to provide an exciting theme for a sandpit.

The sandpit was held at the end of July 2009 and four multi-disciplinary and multi-institutional projects were funded.

- *Knots and evolution – Topological driven integrase mutagenesis* D. Buck (Imperial College) and S. Rosser (Glasgow)
- *Transgenerational effects and evolution* R.A. Johnstone (Cambridge), R. Hoyle (Surrey), S. Townley (Exeter) and J Wells (UCL)
- *Evolution as an info-dynamical system* R. Belavkin (Middlesex), C. Knight (Manchester), A. Channon (Keele) and J. Aston (Warwick)
- *Multiscale dynamics and gene communities* A. McKane (Manchester), J. Gough (Bristol), R. Goldstein (NIMR) and S. Brown (Oxford)

### Contacts

The Mathematical Sciences Programme team is always happy to hear from you about any questions you might have. To make things easier, please contact the most suitable person to deal with your query. If you are not sure whom to contact, we are happy to pass on messages or may even be able to answer questions on behalf of others in some instances.

### Current Programme responsibilities are:

Head of Programme

- Mr David Harman. Responsibilities include: Programme budget and strategy.  
Email: David.Harman@epsrc.ac.uk  
Tel: 01793 444 304
- PA: Catherine Bailey.  
Email: catherine.bailey@epsrc.ac.uk  
Tel: 01793 444 324

### Portfolio Managers

- Dr Mark Bambury. Responsibilities include: Applied Mathematics, Leadership Fellowships, Career Acceleration Fellowships.  
Email: Mark.Bambury@epsrc.ac.uk  
Tel: 01793 444 183

- Dr Vivienne Blackstone. Responsibilities include: Statistics, Operational Research and Mathematical Physics, TCCs, CDTs and DTAs.  
Email: Vivienne.Blackstone@epsrc.ac.uk  
Tel: 01793 444 066
- Dr Caterina Mora. Responsibilities include: Pure Mathematics, Small Grants, Post-Doctoral Fellowships. Email: Caterina.Mora@epsrc.ac.uk. Tel: 01793 444 162

Details of all the activities within the Mathematical Science Programme can be found on our programme pages starting here: [www.epsrc.ac.uk/ResearchFunding/Programmes/MathematicalSciences/default.htm](http://www.epsrc.ac.uk/ResearchFunding/Programmes/MathematicalSciences/default.htm).

## INTEGRABLE SYSTEMS AND SYMMETRIES

### UK–Japan Winter School 2010

The UK–Japan Winter Schools have been held on different topics almost every year since 1999. The aim of the School is to bring together Japanese and UK scientists, in particular young researchers and postgraduate students, in a relaxing and stimulating atmosphere. The topic of the next Winter School will be *Integrable Systems and Symmetries* held from 7 to 10 January 2010 at the University of Manchester. There will be three short courses:

- Darryl Holm (Imperial College London) *The shape of water, metamorphosis and infinite-dimensional geometric mechanics*
- Alexander Mikhailov (University of Leeds) *Symmetries and classification of integrable nonlinear PDEs*
- Alexander Veselov (Loughborough University) *Yang–Baxter maps and discrete integrability*

There will also be a number of guest lectures by others working in the area. More details can be found at [www.mth.kcl.ac.uk/~berndt/conferences/UK-Japan10/ws2010home.html](http://www.mth.kcl.ac.uk/~berndt/conferences/UK-Japan10/ws2010home.html). The Winter School will be followed by a postgraduate conference on 11 January 2010.

### VISIT OF PROFESSOR N. BALAKRISHNAN

Professor N. Balakrishnan (McMaster University, Canada) will be visiting Durham University from 9 to 16 April 2010. Professor Balakrishnan has been actively involved in research in many areas of Statistics, and has made significant contributions to, among other topics, Models and Analysis of Medical and Lifetime Data, Life-Testing and Reliability, Order Statistics, Robust Inference, (Multivariate) Distribution Theory, Characterization Theory, Inferential Methods, Industrial Statistics, Nonparametric Inference, Outliers, Multivariate Analysis, Bayesian and Empirical Bayesian Inference, Combinatorial Applications to Probability and Statistics, Record Values and Processes, Theory of Runs and Scans, Waiting Time Problems, Ranked Set Sampling, and Statistics in Finance.

Professor Balakrishnan will give the following two research seminars:

- Monday 12 April, Edinburgh University: *Over- and under-dispersed Poisson distributions and processes*; for details contact Natalia Bochkina (n.bochkina@ed.ac.uk)
- Thursday 15 April, Newcastle University: *On some stochastic orderings and related characterizations for some discrete and continuous distributions*; for details contact Jordan Stoyanov (jordan.stoyanov@newcastle.ac.uk)

On Wednesday 14 April, Professor Balakrishnan will give a two-hour lecture, as part of a Lecture Day at Durham University as follows:

- Narayanaswamy Balakrishnan (McMaster University) *Permanents, order statistics, outliers and robustness*
- Chris Jones (Open University) *The Cauchy–Schlömilch transformation, its extensions, and a useful analogue*
- Jordan Stoyanov (Newcastle University) *Non-linear transformations of random data: moment determinacy of their distributions*

- Jochen Einbeck (Durham University) *Data compression and regression based on local principal curves and manifolds*
- Tahani Maturi (Durham University) *Nonparametric predictive inference for comparison of lifetime data*

Further details about the Lecture Day are available at [www.maths.dur.ac.uk/~dma0je/bala](http://www.maths.dur.ac.uk/~dma0je/bala). Everybody is welcome to attend this Lecture Day – if you wish to do so read the details on the webpage and contact the organisers with the information requested.

For further details contact Frank Coolen ([frank.coolen@durham.ac.uk](mailto:frank.coolen@durham.ac.uk)). This visit is supported by an LMS Scheme 2 grant.

### GEOMETRY AND TOPOLOGY DURHAM CONFERENCE

A conference on *Geometry and Topology* to mark the retirement of John Bolton and Cherry Kearton will take place at Durham University from 20 to 22 June 2010. The conference speakers are:

- Jürgen Berndt (London)
- Martin Guest (Tokyo)
- Elizabeth Hanbury (Durham)
- Jonathan Hillman (Sydney)
- John Hutton (Leicester)
- Robert MacKay (Warwick)
- Franz Pedit (Tübingen and Amherst)
- Andrew Ranicki (Edinburgh)
- Christine Scharlach (Berlin)
- Nikolai Vorobjov (Bath)
- Luc Vrancken (Valenciennes)
- Steve M.J. Wilson (Bristol)
- John C. Wood (Leeds)

The organisers are Michael Farber, Vitaliy Kurlin, John Parker and Dirk Schütz (Durham). The conference is supported by an LMS Conference grant. Limited support for research students is available. For more information see the conference webpage at [www.maths.dur.ac.uk/~dma0ds/DGTCConference.html](http://www.maths.dur.ac.uk/~dma0ds/DGTCConference.html).





Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

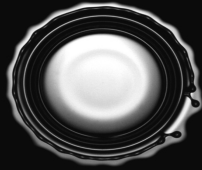
## Two Assistant Professorships in Mathematics

The Department of Mathematics at ETH Zurich ([www.math.ethz.ch](http://www.math.ethz.ch)) invites applications for qualified candidates from all areas of mathematics. Duties of these positions include, in addition to research, an active participation in teaching courses of mathematics for students of mathematics, natural sciences, and engineering.

Candidates should have a Ph.D. or equivalent and have demonstrated the ability to carry out independent research work. Willingness to teach at all university levels and to participate in collaborative work both within and outside of ETH Zurich is expected. The successful candidates will teach undergraduate level courses (German and English) and graduate level courses (English).

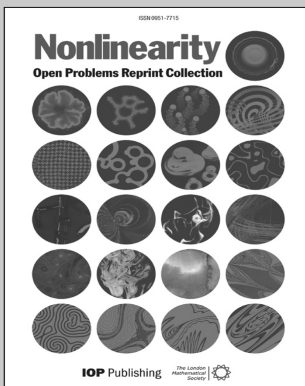
Assistant professorships have been established to promote the careers of younger scientists. The initial appointment is for four years with the possibility of renewal for an additional two-year period.

Please submit your application together with a curriculum vitae and a list of publications **to the President of ETH Zurich, Prof. Dr. Ralph Eichler, ETH Zurich, Raemistrasse 101, 8092 Zurich, Switzerland (or via e-mail to [faculty-recruiting@sl.ethz.ch](mailto:faculty-recruiting@sl.ethz.ch)), no later than February 28, 2010.** With a view toward increasing the number of female professors, ETH Zurich specifically encourages female candidates to apply.



# Nonlinearity

[www.iop.org/journals/non](http://www.iop.org/journals/non)



## Open Problems

To celebrate *Nonlinearity's* 20th anniversary, a series of Open Problems articles was published in issues throughout 2008. These short articles, written by leaders in the field, have been brought together to form a unique all-in-one collection of the outstanding problems in nonlinear science. These include:

- **Turbulence transition in pipe flow: some open questions**  
*Bruno Eckhardt*
- **Three quantum obsessions**  
*M V Berry*
- **Partial differential equation problems from simple to complex fluids**  
*Peter Constantin*
- **Wave-breaking and generic singularities of nonlinear hyperbolic equations**  
*Yves Pomeau, Martine Le Berre, Philippe Guyenne and Stephan Grilli*

and many more.

Order your personal copy of the reprint collection of all 30 Open Problems for just GBP £15/USD \$28.50\* per copy or read them online for free at [www.iop.org/journals/non](http://www.iop.org/journals/non).

\*price includes postage and packaging

**IOP Publishing**

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## MATHEMATICS AND THE ARTS

The first Conference of the *European Society for the Mathematics and the Arts* will take place from 19 to 20 July 2010 at the Institut Henri Poincaré, Paris. The four sections of the conference will be:

- Static works (paintings, sculpture, architecture)
- Cinematic works (videos, films, installations)
- Tools in math art (software, 3D printers)
- Education, history and philosophy in and through math art

Members of the Scientific and Artistic Committee are: François Apéry (Mulhouse), Luc Bénard (Montréal), Claude Bruter (Paris), Jean Constant (Santa Fe), Michele Emmer (Rome), Michael Field (Houston), Jos Leys (Anvers), Dmitri Kozlov (Moscou) and Konrad Polthier (Berlin).

The registration deadline is **15 May 2010**. For further information and registration visit the website at <http://hermay.org/ESMART> or contact C.P. Bruter ([bruter@univ-paris12.fr](mailto:bruter@univ-paris12.fr)) or Hervé Lehning ([lehning@noos.fr](mailto:lehning@noos.fr)).

## FUNCTIONAL ANALYSIS MEETING

An international *Functional Analysis Meeting* on the occasion of the 80th Birthday of Professor Manuel Valdivia will take



© Sidney Harris

place from 7 to 11 June 2010 in Valencia. The Invited Lectures will be given by:

- Alexandru Aleman (Lund University)
- Michael Cwikel (Technion Israel Institute of Technology)
- Garth Dales (University of Leeds)
- Richard Haydon (University of Cambridge)
- Witold Marciszewski (University of Warsaw)
- Luigi Rodino (University of Torino)

For further information and to register on line visit the website at [www.adeit.uv.es/fav2010](http://www.adeit.uv.es/fav2010). The meeting is a joint venture of the University of Valencia and Universidad Politécnica de Valencia.

### NEWS FROM THE FENS

The Part III Mathematics Examination in Cambridge will now result in a degree title (replacing the Certificate of Advanced Study). Cambridge students, who take Part III in their fourth year, will not receive a BA at the end of their third year but will receive a combined BA with MMath on successful conclusion of Part III. Students from outside Cambridge, who do Part III as a nine-month course, will receive a 'Master of Advanced Studies'. More detailed information is given in the *Cambridge Reporter* for 2008/9 ([www.admin.cam.ac.uk/reporter/2008-09](http://www.admin.cam.ac.uk/reporter/2008-09))

### TURNING DREAMS INTO REALITY

The 11th International Conference of the *Mathematics Education into the 21st Century* Project will take place from 10 to 16 September 2011 at Rhodes University, Grahamstown, South Africa. The title of the conference is *Turning Dreams into Reality: Transformations and Paradigm Shifts in Mathematics Education*. The conference will open with an evening welcome reception on Sunday 10 September and close with lunch on Friday 16 September.

The Mathematics Education into the 21st Century Project has just completed its tenth successful international conference in Dresden, Germany, following conferences in Egypt, Jordan, Poland, Australia, Sicily, Czech Republic, Malaysia and the USA. The project was founded in 1986 and is dedicated to the planning, writing and disseminating of innovative ideas and materials in Mathematics, Statistics, Science and Computer Education.

Paper proposals are now invited on all innovative aspects of mathematics, statistics, science and computer education. The conferences are renowned for their friendly and productive working atmosphere. They are

attended by innovative teachers and mathematics educators from all over the world: 44 countries were represented at the last conference. There will be an additional full social programme for accompanying persons. The chairman of the Local Organising Committee is Professor Marc Schafer of Rhodes University. For all conference details email Alan Rogerson ([alan@rogerson.pol.pl](mailto:alan@rogerson.pol.pl)), Chairman of the International Programme Committee.

### LMS SPITALFIELDS DAY

#### Report

An LMS Spitalfields Day was held at the Isaac Newton Institute, Cambridge, on Friday 30 October 2009, as part of the Programme *Non-abelian fundamental groups and arithmetic geometry*. It was organized by the Programme organisers (Minhyong Kim, Florian Pop, Mohamed Saidi, Peter Schneider and John Coates) with the help of Tim and Vladimir Dokchitser.

The theme of the day was *Potential Modularity*, and an audience of about 60 were given a rare insight into the important progress on these questions over the last 15 years, starting with Wiles' fundamental work proving the modularity of semi-stable elliptic curves over the rational field  $\mathbb{Q}$ . Excellent lectures were given by Tobias Berger (Cambridge) *Modularity of Galois representations*, Fred Diamond (King's College, London) *Modularity lifting theorems*, Kevin Buzzard (Imperial College, London) *Potential modularity of residual representations* and Jayanta Manoharmayum (Sheffield) *L-functions and applications*.

All lectures avoided too heavy technicalities, but successfully gave the underlying ideas of the deep and difficult proofs in this area. The organizers are extremely grateful to the speakers for their efforts, and to the LMS for supporting the event, both spiritually and financially.

John Coates  
University of Cambridge

## REVIEWS

**The Mathematics of Sex** by Stephen Ceci and Wendy Williams, Oxford University Press, 2009, 286 pp, £19.99, 978-0-19-538939-5.

The debate surrounding the under-representation of women in science and mathematics is a heated one, and one in which few take a neutral standpoint. In 2005 the economist Lawrence Summers provoked widespread outrage by arguing that the lack of women at the top end of scientific achievement may be due to "issues of intrinsic aptitude". The furore over Summers' remarks, which led to his resignation as president of Harvard University, illustrates that this subject continues to be a highly controversial and sensitive one. In their new book, *The Mathematics of Sex*, Stephen Ceci and Wendy Williams explore the complex area of women's under-representation in maths-intensive professions (including mathematics, physics, computer science and engineering).

The explanation presented by Summers – that biology (i.e. differences in innate ability) is the main cause of the asymmetry between the sexes – is not one that can easily be ignored. There is strong evidence that from infancy males are significantly better than females at certain aspects of spatial ability, which some argue is linked to mathematical ability. Boys also tend to do better than girls at mathematics aptitude tests (although girls consistently outperform boys in the classroom, where factors other than raw aptitude play a role). While the average scores of boys and girls in such tests are similar, the greater variation in boys' scores means that they are over-represented in the extreme right tail of the distribution, with around twice as many boys as girls among the top 1% of scorers. But this male advantage has been shrinking over recent decades and, moreover, there are large differences in the size of the

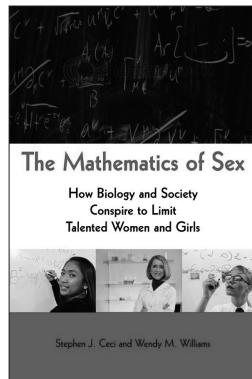
gender gap across different cultures. Ceci and Williams point out that if the gender gap were mainly caused by biological factors, we would not expect to see such inconsistencies over time and across cultures.

Environmental factors, such as cultural influences and discrimination, represent an alternative class of explanation. One theory is the so-called 'high-powered job hypothesis', which states that fewer women than men rise to the top of their professions because women are less likely to be willing to prioritise their career over family commitments. The data seem to support this – in one survey it was found that 60% of women would prefer an adapted work lifestyle allowing them to fit their career

around childcare or other personal goals, whereas men are more work-centred. And although women with children are reported to work more hours per week than men across both their career and domestic duties, they spend less time on their career compared to men with children. This difference in working hours can only serve to increase the gender gap in the workplace.

Although they emphasise that the issue is still very much open to debate, Ceci and Williams tentatively conclude that while many factors contribute to the under-representation of women in mathematical professions, the most potent explanation is the 'personal family-oriented choices' made by women. They also suggest that the gender gap is particularly evident in mathematically-intensive professions because of differences between men and women's interests (with women preferring more 'people-oriented' careers), as well as the influence that girls' lower scores in mathematics aptitude tests have on university admissions.

*The Mathematics of Sex* provides a thorough overview of the substantial body of existing research on this complicated and controversial issue, although regrettably it focuses only on the



issues surrounding women working in academia and not on those in private sector mathematics careers. Nevertheless, the authors succeed in presenting a wide range of arguments and balancing up the experimental evidence for and against each one in a clear and unbiased manner.

Sarah Shepherd  
Editor, *iSquared* magazine

An extended version of this review appears in the Autumn 2009 issue of *iSquared* (<http://www.isquaredmagazine.co.uk>).

**Crocheting Adventures with Hyperbolic Planes** by Daina Taimiņa, A.K. Peters, Ltd, 2009, 148 pp, £25.50, US\$35.00, ISBN 978-1-56881-452-0.

Taimiņa's book is not only a coffee-table book of the highest quality, but it is also, first and foremost, a book about mathematics. It is refreshing different from coffee-table books about mathematics where the actual mathematics is all too often hidden under a layer of high-quality photographs. Using crocheted

hyperbolic planes, Taimiņa explains hyperbolic geometry in a visual and explorative way. In fact, her crocheted pieces have been photographed in natural settings, reminding us that hyperbolic shapes are familiar shapes that appear all around us. I found that Taimiņa has done a wonderful job providing a history of hyperbolic geometry, explaining hyperbolic geometry to a broad audience, and presenting the crocheted hyperbolic planes for tactile explorations, while keeping the book's length down at the same time.

The first chapter discusses the notions of positive and negative curvature and is representative for the rest of the book: several mathematical concepts are explained both visually and in words, without becoming too technical. Moreover, the reader is introduced to the crochet instructions for making his/her own hyperbolic planes. These

crocheted models are used to explain the concepts of perpendicular and parallel straight lines, which is then used to visualize that the sum of the angles of a triangle in hyperbolic geometry actually depends on the lengths of its sides. The educational benefit from the tactile experience is very powerful and should be a standard part of geometry lectures! I thoroughly enjoyed this chapter. In fact, the essence of using crochet to explore otherwise hard to visualize objects is well maintained throughout the entire book.

The real power of the book, however, lies in Taimiņa's skill to bring hyperbolic geometry in the realm of applied mathematics. She discusses how human experiences in areas as different as art/patterns, buildings/structures, navigation/

stargazing and motion/machines influenced the development of geometry. People are still interested in and use hyperbolic geometry and the breadth of applications listed in this book is enlightening; not only do they come from all branches of science, there are also wonderful applications in music and art. For example, Daina

Taimiņa's crocheted hyperbolic planes inspired industrial designer Radu Comsa to design the Rasta Stool ([www.raducomsa.ro/furniture/full\\_rs.html](http://www.raducomsa.ro/furniture/full_rs.html)), which is apparently very comfortable.

I highly recommend this book because of its unique combination of a historical account of hyperbolic geometry with the use of crochet as a tool for its understanding. Finally, we have a beautiful coffee-table book that uses visual delight to emphasise rather than hide serious mathematics. Readers with little knowledge of geometry or mathematics in general may find it hard to understand everything, but as Bill Thurston writes in his foreword: "I hope this book gives you pause for thought and changes your way of thinking about mathematics."

Hinke Osinga  
University of Bristol



## CALENDAR OF EVENTS

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

### JANUARY 2010

**4-8** Stochastic Partial Differential Equations Workshop, INI, Cambridge (383)

**7-10** Integrable Systems and Symmetries Winter School, Manchester (388)

**11-15** New Topics at the Interface Between Probability and Communications Workshop, INI, Cambridge (383)

**12** *Code Breaking in Everyday Life*, Gresham College Public Lecture, Museum of London (384)

**18-19** Feynman Path Integrals and their Applications Meeting, Swansea (387)

### FEBRUARY 2010

**6** Undergraduate Mathematics Conference, London (387)

**9** *Trains and Boats and Planes*, Gresham College Public Lecture, Museum of London (384)

**25-28** EUROMATH 2010 Student Conference, Bad Gaisern, Austria (386)

**26** *LMS Mary Cartwright Lecture*, Durham (388)

### MARCH 2010

**3-5** Mixture Estimation and Applications ICMS Workshop, Edinburgh (386)

**9** *Maths and Sport*, Gresham College Public Lecture, Museum of London (384)

**22-26** Stochastic Networks Workshop, INI, Cambridge (386)

### APRIL 2010

**6-9** BMC/BAMC 2010, Edinburgh (387)

**6-9** BCME7, Manchester (385)

**6-9** Spatial Network Models for Wireless Communications, INI, Cambridge (386)

**12-14** Stochastics, Control and Finance Workshop, Imperial College London (387)

**14** *LMS Northern Regional Meeting*, Newcastle

**14** Lecture Day, Durham (388)

**19-21** Mathematical Neuroscience Conference, ICMS, Edinburgh (386)

### MAY 2010

**4** *Indra's Pearls: Geometry and Symmetry*, LMS-Gresham College Lecture, London (388)

**10-14** Numerical Solution of the Painlevé Equations ICMS Workshop, Edinburgh (386)

**24-28** Uncertainty Quantification ICMS Workshop, Edinburgh (386)

### JUNE 2010

**7-11** Functional Analysis Meeting, Valencia, Spain (388)

**14-18** Hodge-theoretic Reflections on the String Landscape ICMS Workshop, Edinburgh (386)

**20-22** Geometry and Topology Conference, Durham (388)

**21** *LMS South-West and South Wales Regional Meeting*, Cardiff

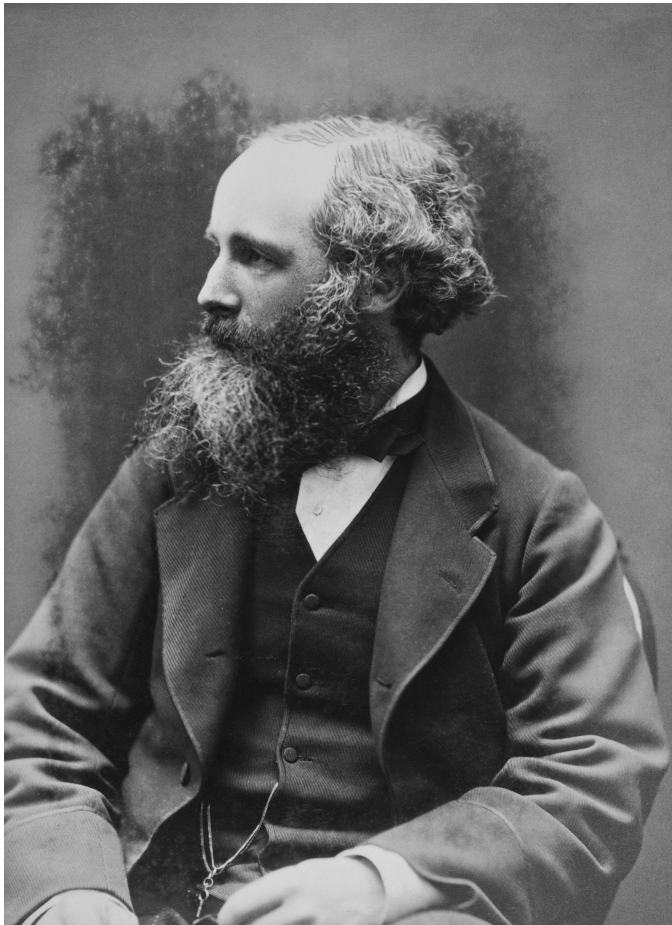
**22-25** Group Representation Theory and Related Topics Conference, Lausanne, Switzerland (386)

**22-25** Mathematical Challenges and Modelling of Hydroelasticity ICMS Workshop, Edinburgh (386)



# J.C. MAXWELL

LMS member 1867–1878



Fergus, Greenock

James Clerk Maxwell, MA, FRS  
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