LONDON MATHEMATICAL SOCIETY

NEWSLETTER

No. 435 April 2014

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NEWSLETTER ONLINE:
newsletter.lms.ac.uk

LMS HARDY FELLOW AND LECTURE TOUR 2014

The Society is pleased to announce Professor Percy Deift (NYU) as the LMS Hardy Fellow for 2014. Professor Deift will undertake a lecture tour of the UK in the summer which will end with the Hardy Lecture at the Society Meeting on Friday 4 July in London. Further details for both the tour and the Society Meeting will appear in the next issue.


Professor Percy Deift

ANNUAL ELECTIONS TO LMS COUNCIL

The Nominating Committee is responsible for proposing slates of candidates for vacancies on Council and vacancies on its own membership. The Nominating Committee actively welcomes suggestions from the membership.

Anyone who wishes to suggest someone for a position as an Officer of the Society or as a Member-at-Large of Council (now or in the future) is invited to send their suggestions to Dr Penny Davies, the current Chair of Nominating Committee (*nominations@lms.ac.uk*). Please provide the name and institution of the suggested nominee, his/her mathematical specialism(s), and a brief statement to explain what s/he could bring to Council/Nominating Committee.

Nominating Committee seeks to maintain a balance in gender, subject area and geographical location when drawing up its list of prospective nominees, and LMS members should bear in mind that it is to the benefit of the Society that Council is balanced and represents the full breadth of the mathematics community. Further details about the work of the Nominating Committee are on the LMS website at *www.lms.ac.uk/about/nominating-committee*.

Nominations should be received by Friday 2 May 2014 in order to be considered by the Nominating Committee.

In addition to the above there exists the option for members to make direct nominations for election to Council or to the Nominating Committee. Direct nominations must be sent to the Executive Secretary's office (*nominations@lms.ac.uk*) to arrive before noon on 1 September 2014. Nominations can be submitted in hard copy or via email. All nominations must bear the signatures of the nominator and three seconders and of the nominee. For hard copy, a

cont'd

letter with the relevant names and signatures is sufficient or submissions can be made via a form available from the LMS website at *http://tinyurl.com/q28lrvp*. For email submissions nominations and statements from seconders must be sent from a verifiable email address to *nominations@lms.ac.uk*. Members considering making a direct nomination are asked to bear in mind the desirability of Council being balanced with regard to the full range of mathematical specialisms, UK regions and gender-balance.

The slate proposed by the Nominating Committee, together with other direct nominations received up to that time, will be posted on the LMS website in early August for members to see before deciding whether they wish to make any further direct nominations.

Further nominations will be posted onto the website as they are received.

LMS Newsletter
http://newsletter.lms.ac.uk

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De Morgan House, 57–58 Russell Square, London WC1B 4HS (t: 020 7637 3686; f: 020 7323 3655)

Articles: send articles to newsletter@lms.ac.uk

Events calendar: updates and corrections to calendar@lms.ac.uk

Advertising: for rates and guidelines see www.lms.ac.uk/newsletter/ratecard.html

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LMS LIBRARY AT UCL

Registering, Renewing and 24 Hour Opening

Members of the Society are reminded that they may register as users of the UCL Library, where the London Mathematical Society Library is held and which contains a collection of:

- periodicals published by other mathematical societies which are received in exchange for the Society's publications
- copies of books and journals published by the Society
- items acquired by the Society as review copies or gifts.

The Society's Library is housed in the UCL Science Library. Members may also use all the material available in the reading rooms and stores of the UCL family of libraries.

These privileges include:

- Borrowing up to ten items at any one time.
- Placing up to three concurrent reservations on material already on loan.
- Borrowing books by post without service charge (costs for returning the books must be covered by the user).
- Access to MathSciNet and specific electronic journals from designated terminals in the Science Library.
- Use of the "Explore" access points to search for and view electronic publications and save single copies of articles (no more than one article per journal issue) for your own personal use. You can save articles to standard USB sticks, note

that USB sticks containing encrypted software do not work on the Explore access points.
- Use of photocopying facilities at UCL libraries (charged at the same rate as UCL staff).
- Rapid photocopying service by post - Photocopy Request and Copyright Declaration Form.

Use of the Library at UCL does not include remote electronic access to journals and articles.

To register/renew (in person)

Complete the application form (which can be downloaded from www.ucl.ac.uk/Library/borrowing.pdf) and bring the following items with you:
- passport-size photograph
- proof of identity e.g. passport, photocard driving licence
- proof of address e.g. utility bill, recent bank statement, valid photocard driving licence
- proof of membership – a letter of confirmation can be obtained from the Society, please email membership@lms.ac.uk

To register/renew (by post)

To register by post, please complete the application form (which can be downloaded from www.ucl.ac.uk/Library/borrowing.pdf) and return it with:
- a passport-size photograph
- proof of membership – a letter of confirmation can be obtained from the Society, please email membership@lms.ac.uk

to: Head of Membership, UCL Library Services, University College London, Gower Street, London WC1E 6BT (tel: 020 7679 7953, fax: 020 7679 7373, email: lib-membership@ucl.ac.uk).

When registering by post, library cards will be posted back to the address given on the application form.

Library cards valid for 12 months

Library cards are valid for 12 months from date of issue and will need to be renewed each year. No charge is made for the initial registration or for renewing expired library cards or cards which are within one calendar month of expiring.

Reminders to renew: To receive reminders to renew by email from the Library at UCL, please remember to include an email address on the form when registering and renewing. The UCL Library will send out reminders two weeks before your library card is due to expire.

Forgotten cards: please note that if you forget your library card, you will not be admitted to any UCL Library. This rule is strictly applied.

24 hour opening

The Science Library is pleased to announce it is now open 24 hours for UCL Library card holders and has extended the opening hours of the assistance desk.

Please note:
- During the weekends and evenings, the Library is open to lend books and handle loan-related queries. For all other queries, please contact a member of staff during office hours (www.ucl.ac.uk/library/help.shtml).
- During the year, the opening hours may change. Please check the Science Library website before travelling (www.ucl.ac.uk/library/science.shtml#open).

For further information about the Society's Library visit www.lms.ac.uk/library/lms-library.

Opening hours

	Assistance Desk	Self Service	Reading Rooms
Monday	09:30 - 20:45	Open from 09:00	Open from 08:45
Tuesday	09:30 - 20:45	24 hour opening	24 hour opening
Wednesday	09:30 - 20:45	24 hour opening	24 hour opening
Thursday	09:30 - 20:45	24 hour opening	24 hour opening
Friday	10:00 - 20:45	24 hour opening	24 hour opening
Saturday	11:00 - 17:45	Close at 20:45	Close at 21:00
Sunday	Closed	11:00 - 20:45	11:00–21:00 (holders of UCL Library Cards only)

MATHEMATICS POLICY ROUND-UP

March 2014

RESEARCH

Science and Research Funding 2015/2016

The Department for Business Innovation and Skills has published a document setting the allocation of the ring-fenced science and research budget for the Research Councils, Higher Education Funding Councils, National Academies and UK Space Agency for the financial year 1 April 2015 to 31 March 2016.

This brings the overall investment in science and research to £5.8 billion in 2015 to 2016. The document is available at http://tinyurl.com/koqm6fr.

HIGHER EDUCATION

BIS grant letter to HEFCE

The Secretary of State for Business, Innovation and Skills (BIS) and the Minister for Universities and Science have confirmed funding allocations to the Higher Education Council for England (HEFCE) for financial year 2014-15.

The grant letter confirms government funding for HEFCE and for higher education for the third year of the new financial arrangements for higher education in England. It also sets out indicative allocations for financial year 2015-16. More information is available at http://tinyurl.com/po9c4g2.

REF 2014 submissions

A total of 191,232 outputs were submitted to the 2014 Research Excellence Framework, 24,275 fewer than for the 2008 Research Assessment. Figures published by HEFCE show that this 11 per cent decline in submissions was accompanied by a small decline in the number of full-time staff submitted by universities. A total of 52,077 category A full-time staff have been included in the REF, down 0.6 per cent. The number of Outputs submitted in the Mathematical Sciences is essentially unchanged at 6,995, as is the number of staff returned, at 2,005. More information is available at http://tinyurl.com/oglgedk.

SCHOOLS AND COLLEGES

Maths teachers further education funding

Up to £20 million will be made available to encourage the brightest and the best to teach mathematics in further education colleges, Skills and Enterprise Minister Matthew Hancock has announced.

The new funding will be available to support graduates in the further education sector and the institutions which recruit them. The funding will be channeled in three ways:

- a golden hello; a bonus of £7,500 for graduates teaching mathematics in further education paid in the second year of teaching. This will rise to £10,000 if they train to support learners with special educational needs;
- a Recruitment Incentive scheme; a bonus payment of £20,000 to colleges and training providers who recruit a specialist graduate mathematics teacher or £30,000 for those who will be sharing their teaching expertise with nearby institutions; and
- a Subject Knowledge Enhancement scheme to enable highly qualified graduates who have the skills and aptitude to teach but need to develop some specific mathematics skills before they start teacher training.

'It is expected that these measures will result in the recruitment of over 500 specialist mathematics teachers by September 2015'.

Year of Code

The government has launched the Year of Code with a £500,000 fund to train teachers in software coding. The money will be used to pay experts to train teachers in coding ahead of a new computing curriculum, beginning in September 2014.

The scheme was drawn up with input from the British Computer Society (BCS), the Royal Academy of Engineering, and technology companies including Google and Microsoft.

More information is available at http://tinyurl.com/pdtzvqu and www.yearofcode.org/.

Gove speech on future of education

The Education Secretary Michael Gove gave a speech in London in February. In this speech he highlighted the work of Professor Sir Timothy

Gowers and Professor Martin Hyland in developing new courses and bringing teaching materials to students across the country. The transcript of the speech is available at http://tinyurl.com/o5h386d.

OTHER

Open access: Response to Finch follow up report
The government has responded to the Finch follow up report. The letter is available at http://tinyurl.com/pyeumkc.

Women in Scientific Careers report
'Universities must do more to retain women in scientific careers', according to a report from the Science and Technology Select Committee.

Andrew Miller MP, Chair of the Committee, said: 'It is astonishing that women still remain underrepresented at professorial levels in academia across every scientific discipline. It's time for universities to pull their socks up.

Some universities are doing a great job at improving working conditions for women scientists, but others are not. The system of short term contracts is hugely off-putting for many women scientists.

More standardisation is required across the whole higher education sector and that is why we have called for government, universities and research councils to review the academic careers structure, so that talented women, and men, can have more stable career pathways.'

The report is available at http://tinyurl.com/o33d6wr.

First woman president of the Royal Society of Edinburgh


Dame Jocelyn Bell Burnell

The Royal Society of Edinburgh elects Professor Dame Jocelyn Bell Burnell to be its next President. The world-renowned astrophysicist and prominent science communicator is the new President-elect of the Royal Society of Edinburgh (RSE). The election follows a ballot of all RSE Fellows which saw an overwhelming response in favour of her nomination. Dame Jocelyn will succeed the current President, Sir John Arbuthnott, in October. More information is available at http://tinyurl.com/nhby3ar.

Dr John Johnston
Joint Promotion of Mathematics

LMS WOMEN IN MATHEMATICS DAY 2014

The Women in Mathematics Day is an annual event organised by the London Mathematical Society. This year it will be held on **Friday 25 April** at De Morgan House in London. As usual, sessions will include talks by women mathematicians at different career stages and a poster session. There will also be a number of practical sessions to help women get the most out of their careers in mathematics. Sessions will include advice on how to get funding for your first postdoc and beyond and discussion groups on topics such as combining family and career, working overseas and making the next step in your career.

The event provides an opportunity to meet and talk with women who are active and successful in mathematics.

The event is open to all but would be of particular interest to women mathematicians, particularly PhD students and those at an early stage of their career.

Any postgraduates, postdocs or research assistants interested in giving a talk or presenting a poster at the meeting should contact Eugenie Hunsicker (e.hunsicker@lboro.ac.uk) by **28 March 2014**.

To encourage high quality posters, a £50 book token will be awarded for the poster that is judged to be the WiM Day Best Poster 2014.

Programme

10.30-11.00	**Registration and Coffee**
11.00-13.00	**Morning Session** Welcome from LMS President Sarah Hart (Birkbeck College) *Counting in Coxeter Groups* Katia Babbar (Lloyds) *Quantitative Finance in Practice: a Mathematician on the Trading Floor* Anne Juel (University of Manchester) *Confining bubbles in small spaces: Instabilities and Pattern Formation on the pore scale*
13.00-14.00	**Lunch and Poster Session**
14.00-16.00	**Afternoon Session** Postgraduate/Postdoctoral speakers Funding talk (EPSRC) Discussion groups
16.00-16.30	**Tea and end of Poster Session**

Participants are invited to join us for dinner at a local restaurant after the event. If you would like to attend please confirm when you register. The dinner will be at participants' own cost.

The event is free for students and speakers and £5 for all others, payable on the day.

Limited funds are available to help with the travel costs of students attending the event, please email womeninmaths@lms.ac.uk for further details.

Register by **11 April 2014** by emailing womeninmaths@lms.ac.uk (late registrations for places may be accepted, subject to availability).

LMS INVITED LECTURER 2014

Professor Jouko Väänänen

(University of Helsinki and University of Amsterdam)

14–17 April 2014

University of East Anglia

Games, trees and models: This is a new approach to mathematical properties of uncountable structures. We relate it to certain transfinite games, mathematics of trees, and a branch of model theory called stability theory.

Foundations of mathematics and second order logic: The role of second order logic is a source of a lot of debate in the area of foundations and philosophy of mathematics. In this topic we give a mathematical approach to second order logic, using methods from the first topic, and discuss a foundational and philosophical interpretation of the results.

The mathematical theory of dependence and independence: A topic introduced by Väänänen in his 2007 monograph Dependence Logic. The general methodology introduced in the previous two topics is used to analyse dependence and independence concepts throughout mathematics with applications to computer science, and a number of other fields of science, where dependence and independence concepts have a crucial role.

There will also be supplementary lectures by:

- S. Abramsky (Oxford)
- J. Bagaria (ICREA, Barcelona)
- M. Dzamonja (UEA)
- D. Isaacson (Oxford)
- P. Galliani (Clausthal University of Technology)
- P. Welch (Bristol)

Lectures on April 14 will take place in London, other lectures in Norwich. University accommodation will be available. Limited financial support is available with preference given to UK research students. Please contact the organisers for further details: M.Dzamonja@uea.ac.uk

For further details on the 2014 Invited Lectures please visit:
www.uea.ac.uk/~h020/Jouko.html

LMS REPRESENTATIVES 2014

The Society is pleased to announce that there are now 51 LMS Representatives at institutions across the UK. An updated list of the current representatives and their institutions is given below.

If there is no representative listed for your institution please contact *membership@lms.ac.uk*. It is our aim to have representatives at every higher educational institution in the UK. It is essential that your representatives on Council are kept aware of the challenges and opportunities facing mathematics in the UK so that they can reflect your views accurately.

The Society exists to serve all branches of mathematics – pure, applied and applicable - and our current representatives have a similar wide range of research interests. Applicants from all areas and disciplines are invited.

Role of the LMS Representative

Membership
- Encourage membership
- Act as proposer/seconder and assist in finding a proposer/seconder
- Encourage local members to vote in the annual LMS Elections
- Act as a local contact for the LMS

Grants
- Promote LMS grants to colleagues

Events and Activities
- Encourage attendance at Regional Meetings
- Promote LMS events and activities e.g. displaying posters, emails to colleagues

Students
- Liaise with student societies
- Encourage membership amongst students

Working with the LMS and other LMS representatives
- Liaise with LMS Regional Representatives and the LMS Treasurer
- Work with other LMS departmental representatives
- Attend an annual LMS Representatives Meeting at De Morgan House
- Regular liaison with De Morgan House, requesting support where needed
- Produce an annual report for the LMS.

List of LMS Representatives (April 2014)

Regional Representatives

Region	Representative	Email
Midlands Regional	Chris Parker	c.w.parker@bham.ac.uk
Northern Regional	Mike Prest	mprest@manchester.ac.uk
South West & South Wales	Tomasz Brzezinski	T.Brzezinski@Swansea.ac.uk

Representatives

Institution	Representative	Email
Aberystwyth	John Gough	jug@aber.ac.uk
Bath	Jonathan Dawes	j.h.p.dawes@bath.ac.uk
Birkbeck	Ben Fairbairn	b.fairbairn@bbk.ac.uk
Birmingham	Natalia Petrovskaya	n.b.petrovskaya@bham.ac.uk
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UWE	Tim Swift	tim.swift@uwe.ac.uk
Warwick	John Cremona	J.E.Cremona@warwick.ac.uk
York	Stephen Donkin	stephen.donkin@york.ac.uk

LONDON MATHEMATICAL SOCIETY MIDLANDS REGIONAL MEETING

Loughborough University

Monday 16 June 2014

2.00 pm	Opening of the meeting
	Werner Müller (Bonn University)
3.00 pm	**Gigliola Staffilani** (MIT)
4.00 pm	Tea/Coffee
4.30 pm	**Alexander Pushnitski** (King's College London)
6.00 pm	Wine Reception/Dinner

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

For further details and to register and to reserve a place at the dinner, please visit http://homepages.lboro.ac.uk/~maeh/waves14/lms14.html. The cost of the dinner will be approximately £35, including drinks.

The meeting forms part of a workshop on Scattering Theory and Wave Equations from 16-18 June 2014. For further details visit: http://homepages.lboro.ac.uk/~maeh/waves14/index.html or contact the organisers. (C.Garetto@lboro.ac.uk)

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

LMS COUNCIL DIARY

7 February 2014
A personal view

The first Council Meeting of the year took place in the premises of the Chartered Institute of Public Relations a few doors down from De Morgan House. The facilities at De Morgan House are, of course, excellent, but our neighbour's building seemed more like a boutique hotel. There is clearly, and appropriately, more money for this sort of thing in public relations than in mathematics.

Three new Members-at-Large (David Evans, Gwyneth Stallard and Iain Stewart) had been elected at the Annual General Meeting, and they were welcomed by Terry Lyons who as the new President was chairing his first Council Meeting.

A regular agenda item is a report on recent Presidential activities. Sometimes this is reminiscent of the formal beginning to Prime Minister's Question time — "Today I met a delegation from the road haulage industry …". There is, of course, some of that, but this time the President began by outlining his priorities for the Society. He emphasised the importance of the so-called People Pipeline and of reinforcing geographical diversity in advancing innovative and world-class mathematical research in the UK. Promoting engagement of HEIs with secondary education in order to enrich the quality of mathematical provision was also a priority

It had been reported at the November meeting that revised figures from OUP meant that the net publications surplus was unlikely to meet the level anticipated in the current year's budget. As this surplus provides a significant part of the Society's income, the Treasurer Rob Curtis in his regular quarterly report had now to ask us to approve some revisions to the budget. Also revised on Rob's recommendation was the draw-down figure used in the Yale formula used to smooth out our income from investments. This had previously been lowered to 3.0% in 2012 in response to poor performance in the stock markets, but it was now felt to be time to return to the previous 3.5%.

The Society's 150th anniversary being only 343 days away, plans for the various activities to mark the event (now whittled down to a shortlist of 33 ideas: meetings, publications, grants) were approved and the costs underwritten. The aim is that the celebrations should give rise to real, tangible and lasting effects.

Already advertised are the 150th Anniversary Postdoctoral Mobility Grants, which Council Members reported have been very well received. However Member-at-Large Colva Roney-Dougal pointed out that the requirement to spend between three and six months away from the holder's home institution risked discriminating against those with caring responsibilities. Council agreed that the regulations should be amended to allow shorter visits in such circumstances (see page 15).

In the final item the Treasurer presented us with an interesting demographic breakdown of the LMS's membership. Most striking was that only 17% of our 2,299 members are under 40, but Rob reported that recent recruitment, which continues to be buoyant, is doing something to improve this figure.

A request for a volunteer to take on the role of Council Diarist had been made in the meeting, but it was only subsequent (metaphorical) arm-twisting which led to the task being given to …

Francis Clarke

LMS GRANT SCHEMES

RESEARCH GRANT APPLICATIONS

Next closing date for research grant applications: **15 May 2014**. Applications are invited for the following grants:

- Conferences and postgraduate research conferences held in the UK (Schemes 1 and 8)
- Celebrating new appointments (Scheme 1)
- Visits to the UK (Scheme 2)
- Research in Pairs (Scheme 4)
- International short visits with the main focus on Africa (Scheme 5)

For full details of these grant schemes, and to download application forms, visit the LMS website (www.lms.ac.uk/content/research-grants)

- Applications received by 15 May 2014 will be considered at a meeting in June.
- 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.

Queries regarding applications can be addressed to the Grants Administrators or the Programme Secretary (see below) who will be pleased to discuss proposals informally with potential applicants and give advice on the submission of an application.

- Grants Administrators: Sylvia Daly and Elizabeth Fisher and (tel: 020 7291 9971/3, email: grants@lms.ac.uk).
- Programme Secretary: Rob Wilson (email: r.a.wilson@qmul.ac.uk).

OTHER LMS GRANTS AND FUNDING

Computer Science Small Grants (Scheme 7)
Funding for grants **up to £500** is available to support a visit for collaborative research at the interface of Mathematics and Computer Science either by the grant holder to another institution within the UK or abroad, or by a named mathematician from within the UK or abroad to the home base of the grant holder. The next deadline for applications is **15 April 2014** – visit the website for further details (www.lms.ac.uk/content/computer-science-small-grants-scheme-7).

Childcare Supplementary Grants
Grants of **up to £200** are available to parents working in mathematics to help with the cost of childcare when attending a conference or research meeting. The Society believes that all parents working in mathematics should be able to attend conferences and research meetings without being hindered by childcare costs. Institutions are expected to make provision for childcare costs and parents are encouraged to make enquiries. However, where this is not available, the Society administers a Childcare Supplementary Grants Scheme. Further details can be found on the LMS website: www.lms.ac.uk/content/childcare-supplementary-grants

Small Grants for Education
Funding for grants **up to £800** is available to stimulate interest and enable involvement in mathematics from Key Stage 1 (age 5+) to postgraduate level and beyond. Anyone working/based in the UK is eligible to apply for a grant. If the applicant is not a member then the application must be countersigned by an LMS member or another suitable person such as a Head teacher or senior colleague. The next deadline for applications is **30 April 2014**. Visit the website for further details (www.lms.ac.uk/content/small-grants-education).

Research Workshop Grants
The Society offers grants to support for Research Workshops held in the UK. Requests for support (for travel and subsistence of participants, and reasonable associated costs) in the range **£1,000-£10,000** will be considered. The maximum award is **£10,000**, but a typical award is in the range of **£3,000 - £5,000**. Applications for partial support of workshops with other sources of support will be considered. For further information visit: www.lms.ac.uk/content/research-workshops-grants.

Spitalfields Days
Grants of **up to £1,000** are available to support an LMS Spitalfields Day, which have been run since 1987 and are in honour of the Society's predecessor, the Spitalfields Mathematical Society (1717-1845). A Spitalfields Day is a one-day meeting, which is usually associated with a long-term symposium on a specialist topic at a UK university. Selected participants, often distinguished experts from overseas, give survey lectures (or other types of lecture accessible to a general mathematical audience) on topics in the field of

the symposium. The next deadline for applications is **15 May 2014**. Further details can be found on the LMS website (www.lms.ac.uk/content/spitalfields-days#applications).

Young British and Russian Mathematicians Scheme

Visits to Russia

Applications are invited from young British postdoctoral mathematicians who wish to spend a few weeks in Russia giving a series of survey lectures on the work of their school.

The LMS is offering grants of **up to £500** to meet the travel costs, while the host should apply to the Russian Academy of Sciences for funding towards local expenses for accommodation and subsistence. Please contact Sylvia Daly (grants@lms.ac.uk) for information before contacting the Russian Academy of Sciences for funding. Applications to the LMS should include the following:

- A brief academic case for the visit, including a description of your current research interests, and an outline of your planned work during the visit (no more than one side of A4).
- A brief CV (no more than one side of A4).
- A brief budget.
- A letter of invitation from the head of the host department in Russia, which must state explicitly that your accommodation and subsistence expenses will be met by them. This should include provisional dates for the visit.

Financial and academic reports will be required after the visit. In exceptional circumstances, applications may be considered from strong research students who are close to finishing their doctorates. Applications should include a strong case and the student should obtain a letter of recommendation from his/her supervisor.

Visits to Britain

Under this Scheme, applications may also be made by any mathematician in Britain wishing to host a visit by a young Russian postdoctoral mathematician who wishes to spend a few weeks in Britain giving a series of survey lectures on the work of their Russian seminar.

The LMS is offering grants to the host institution to meet the visitor's actual travel and accommodation costs of **up to £1,500**. Applications should include the following:

- Name and brief CV of the visitor.
- A brief budget
- A brief description of the course of lectures.
- A letter or email of agreement from the head of the host department, including the proposed dates of the visit.

Financial and academic reports will be required after the visit. Further details of the Scheme can be found on the LMS website: www.lms.ac.uk/content/international-grants#YBR. Applications received by 15 May 2014 will be considered at a meeting in June. Enquiries should be made to the Grants Administrators: Sylvia Daly and Elizabeth Fisher (tel: 020 7291 9971/3, email: grants@lms.ac.uk)

ROLLO DAVIDSON TRUST

The Rollo Davidson Trustees have awarded the 2014 Rollo Davidson Prize jointly to **Paul Bourgade** (Institute for Advanced Study, Princeton and University of Cambridge) for remarkable new results in random matrix theory and related topics and to **Ivan Corwin** (Columbia University and MIT) for outstanding achievements in the area of stochastic growth processes and their relation to integrable systems.

The Trust was founded in 1975 in memory of Rollo Davidson, an accomplished mathematician of remarkable potential, and Fellow-elect of Churchill College, Cambridge, who died on the Piz Bernina in 1970. Initial funding from the Trust came from the royalties of two collections of papers published in 1973/74 by friends and colleagues of Rollo. The Trust awards an annual prize for young probabilists and has benefited from the continuing association with the Davidson family. For further information visit the website at www.statslab.cam.ac.uk/Rollo.

THE LONDON MATHEMATICAL SOCIETY
JOINTLY WITH GRESHAM COLLEGE

Wednesday, 21 May 2014

6:00pm at The Museum of London

The Secret Mathematicians

Professor Marcus Du Sautoy, OBE

University of Oxford

From composers to painters, writers to choreographers, the mathematician's palette of shapes, patterns and numbers has proved a powerful inspiration. Artists can be subconsciously drawn to the same structures that fascinate mathematicians as they hunt for interesting new structures to frame their creative process.

Professor du Sautoy will explore the hidden mathematical ideas that underpin the creative output of well-known artists and reveal that the work of the mathematician is also driven by strong aesthetic values.

ADMISSION FREE

NO RESERVATIONS REQUIRED – FIRST COME, FIRST SERVED

Museum of London, London Wall, London EC2Y 5HN
Nearest underground stations: Barbican, St Paul's, and Moorgate

020 7831 0575 enquiries@gresham.ac.uk www.gresham.ac.uk

LMS 150TH ANNIVERSARY POSTDOCTORAL MOBILITY GRANTS

2014-15 Awards

The London Mathematical Society is pleased to announce the launch of a new grants scheme to celebrate its 150th anniversary in 2015. Up to £9,200 will be awarded to mathematicians of excellent promise. The purpose of the grants is to support a period of study and research in mathematics between three and six months in the academic year 2014-15 at one or more institutions other than the holder's home institution. They are intended to support promising researchers during the transitional period between having submitted their thesis and the start of their first post-doctoral employment. The value of the grant will be calculated at £1,200 per month plus a travel allowance of up to £2,000.

At the time of the closing date applicants have to be UK residents. Successful candidates must have submitted their thesis within twelve months before the start of their grant period. Grant holders are allowed to teach up to three hours a week. Otherwise they are expected to spend their working time on study and research.

Candidates are asked to provide with their application:

- a completed application form
- a cover letter;
- a CV including a list of publications (maximal two A4 pages);
- a research proposal including a rationale for the choice of institution(s) to be visited (maximal three A4 pages);
- at least two letters of reference, which should be emailed by referees directly to the LMS (to the email address below) by the closing date;
- and letter(s) of support from the host(s) at the institution(s) where the proposed visit will take place; it is expected that host institutions provide the grant holder with office space and access to computing and library facilities.

Eligibility has now been expanded to include candidates with circumstances that make moving impractical (for example childcare responsibilities), who may opt to remain living at home while making shorter visits to other institutions across the three to six month period.

These grants have been established by the LMS to mark its 150th anniversary. They will be awarded for the academic years 2014-15 and 2015-16.

Applications should be sent by Friday 25 April 2014 **preferably by email** to: pmg@lms.ac.uk.

(Posted applications will be accepted and may be sent to: Katy Henderson, Postdoctoral Mobility Grants, The London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HS.)

Queries should be referred to Katy Henderson: pmg@lms.ac.uk, tel.: +44 (0)20 7927 0809.

Applicants will be notified of the outcome of their application in late May 2014.

EUROPEAN NEWS

The following items are taken from http://euro-math-soc.eu/news.html

ICMI Awards

The European Society for Research in Mathematics Education (ERME), congratulates both Michèle Artigue and Frederick Leung for the citation of their International Commission on Mathematical Instruction (ICMI) awards, and acknowledges their important contributions to mathematics education and therefore to the mathematics education community.

Frederick Leung has received the ICMI Hans Freudenthal Award, named after the eighth president of ICMI (1967-1970), which recognizes a major cumulative program of research. Michčle Artigue received the ICMI Felix Klein Award, named after the first president of ICMI (1908-1920), which honours a lifetime achievement.

Cantor Medal 2014

The German Mathematical Society (DMV) awards the Cantor medal every second year. The Cantor medal for 2014 goes to Herbert Spohn, professor for Applied Probability Theory at the Technical University in Munich. Spohn's insights have had a decisive impact on the development of stochastic analysis, the theory of kinetic equations and on mathematical physics. Further information about the prize can be found at http://tinyurl.com/qythjvy (in German).

Rolf Schock Prize 2014

The Royal Swedish Academy of Sciences has decided to award the Rolf Schock Prize 2014 in the field of mathematics, amounting to SEK 600.000 (almost £70,000), to Professor Yitang Zhang (University of New Hampshire, USA), 'for his spectacular breakthrough concerning the possibility of an infinite number of twin primes'. Further information about the prize can be found at www.rolfschockprizes.se/engelskasidor/home.1_en.html.

Wolf Prize 2014

Peter Sarnak has been awarded the 2014 Wolf Prize in Mathematics. A mathematician of extremely broad spectrum and far-reaching vision, Sarnak has influenced the development of several mathematical fields, often by uncovering deep and unsuspected connections. Sarnak is the Eugene Higgins Professor of Mathematics at Princeton University and is a professor at the Institute for Advanced Study in Princeton.

Poincaré Chair: Call for proposals

Launched in January 2013 by the Institut Henri Poincaré (Paris) and the Clay Mathematics Institute, the Poincaré Chair offers exceptionally talented young mathematicians ideal working conditions to develop their scientific projects. This six month or one year research program is open to all research themes in mathematics. Without having to teach, the candidates whose research project meets the required conditions can count on the administrative team of the IHP to organize courses or any other activity of knowledge diffusion. Deadline for submissions: **31 May 2014**. Further information can be found at www.ihp.fr/en/PoincareChair

CRM receives funding from the Simons Foundation

The Simons Foundation has chosen to approve funding to the Centre de Recerca Matemàtica, Barcelona (CRM) to establish a Simons Visiting Programme, aimed at enhancing the participation of senior researchers in the CRM Thematic Research Programmes.

EMS Newsletter

The EMS Newsletter is now on Facebook www.facebook.com/EMSnewsletter as well as Twitter https://twitter.com/EMSnewsletter.

David Chillingworth
LMS/EMS Correspondent

ERRATUM

LMS–WIMCS Analysis Day Report

We apologise for an unintentional omission of the talk by Carlo Mercuri (Swansea University) from the report on the *LMS–WIMCS Analysis Day*, published in the March issue of the *LMS Newsletter* (pp 10–11). Carlo's talk was entitled *Quasilinear elliptic problems involving the critical Sobolev exponent*.

Kirill Cherednichenko and Marco Marletta
Cardiff University

EUROPEAN MATHEMATICAL SOCIETY NOMINATIONS

EMS Lecturer

Every year, the European Mathematical Society (EMS) appoints an EMS Lecturer. This is an honorary post, bestowed on an internationally renowned researcher. An EMS Lecturer is asked to deliver several lectures in various European places; one of the lectures is tied to an international conference in Europe. Costs of EMS Lecturers are supported by the EMS. Nominations for the EMS Lecturer in 2015 should be submitted by **30 April 2014**.

EMS Distinguished Speaker

An EMS Distinguished Speaker is a prestigious appointment, awarded by the EMS to an internationally renowned researcher. An EMS Distinguished Speaker is asked to deliver a plenary lecture at a large regional or international European conference. Costs of EMS Distinguished Speakers are supported by the EMS. Nominations of conferences taking place in 2015 that can host a lecture or a series of lectures by an EMS Distinguished Speaker should be submitted during 2014 and three months before the conference takes place.

An EMS Weekend

An EMS Weekend is a regional European conference, interdisciplinary and covering several mathematical fields; usually organized jointly with one or several corporate societies. The EMS provides partial financial support to the organization. Proposals for EMS Weekends in 2015 should be submitted before 31 August 2014.

For all of the above go to www.euro-math-soc.eu/node/3265 for further information and application forms.

LMS SOCIETY MEETING AT THE BMC

8 April 2014 at 11.30 am
Queen Mary, University of London

Claire Voisin
(CNRS and École Polytechnique)
Points, zero cycles, and rationality questions

ABSTRACT

A very classical question in algebraic geometry is whether a given smooth projective variety is rational, that is, birationally isomorphic to projective space, or to give necessary criteria for rationality. Assuming we work over the complex numbers, this is very restrictive on the geometry of the considered variety seen as a complex manifold. Still, if we restrict to the so-called rationally connected varieties, proving that X is non rational is delicate. I will describe classical and more recent methods to approach this problem.

Claire Voisin

The British Mathematical Colloquium will take place in the School of Mathematics, Queen Mary, University of London, from 7 to 10 April 2014. The first talk will start at 15:30 on Monday 7 April, and the last talk will end at 12:30 on Thursday 10 April. To register, visit www.maths.qmul.ac.uk/bmc2014/registration.

LMS SOCIETY MEETING
MATHEMATICS AND THE FIRST WORLD WAR

Saturday 6 September 2014

De Morgan House, 57-58 Russell Square, London WC1B 4HS

10:00	Coffee and Registration
10:30	**Reinhard Siegmund-Schultze** (Agder) *German and Austrian mathematical efforts during the First World War*
11:30	**David Aubin** (Paris) *The Total War of Paris Mathematicians*
12:15	**June Barrow-Green** (Open University) *What did Cambridge mathematicians do during the First World War?*
1:00	*Lunch*
2:15	**Rosanna Tazzioli** (Lille) *The reaction of Italian mathematicians to the entrance of Italy in the First World War*
3:00	**Deborah Kent** (Drake University) *Developing a theory of ballistics from experimentation and mathematics: O. Veblen, F.R. Moulton, and the Aberdeen Proving Ground Project*
3:45	*Tea*
4:15	**Joseph Dauben** (CUNY) *The international diplomacy of G.H. Hardy*
5:15	Close of meeting. Wine Reception
7:00	Society Dinner

To register contact Elizabeth Fisher (lmsmeetings@lms.ac.uk) by **Monday 1 September**. Late registrations for places may still be accepted, subject to availability.

The reception will be followed by a dinner at venue (tbc), at a cost (tbc) per person, inclusive of wine. If you would like to attend the dinner, please contact Elizabeth Fisher (lmsmeet ings@lms.ac.uk) by **Monday 1 September**.

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Please contact Elizabeth Fisher (lms meetings@lms.ac.uk) for further information.

AN INVITATION TO GEOMETRY & TOPOLOGY VIA G_2

LMS–CMI Research School

Imperial College 7-11 July 2014

Organisers: Mark Haskins (Imperial), Jason Lotay (UCL) and Simon Salamon (KCL)

The aim of the research school will be to give a thorough introduction to G_2 geometry, starting from fundamental material and progressing through to recent breakthroughs and current research in which the UK plays a leading role. The school will also introduce participants to topics of broader interest in algebra (e.g. representation theory), analysis (e.g. elliptic regularity), geometry (e.g. holonomy) and topology (e.g. characteristic classes). The course will also indicate some connections beyond mathematics to contemporary theoretical physics (M-theory). The three main courses are:

- *Special holonomy* (**Robert Bryant**, Duke)
- *Calibrated submanifolds* (**Jason Lotay**, UCL)
- *G_2 manifolds* (**Johannes Nordström**, Bath)

There will be three guest lectures by:

- **Nigel Hitchin** (Oxford) *Title TBC*
- **Bobby Acharya** (KCL) *Theoretical physics and its connections with G_2 geometry*
- **Mark Haskins** (Imperial) *Recent advances in research in G_2 geometry*

These lecture courses will be supplemented by tutorial sessions.

For further information visit: www.claymath.org/events/invitation-geometry-and-topology-g2

Applications: Applications should be made using the registration form available via the Society's website at: www.lms.ac.uk/events/lms-cmi-research-schools. Research students and post-docs in mathematics and in theoretical physics are particularly encouraged to apply.

The closing date for applications is **Monday 12 May 2014**. Numbers will be limited and those interested are advised to make an early application.

All applicants will be contacted within two weeks after the deadline; information about individual applications will not be available before then

Fees: All research students and early career researchers will be charged a registration fee of **£150**. **There will be no charge for subsistence costs.**

Other participants will be charged a registration fee of £250 plus the full subsistence costs (£350) **£600** in total. Some contribution to travel costs will be available for both UK-based and overseas-based participants.

Fees are not payable until a place on the course is offered but will be due by 9 June 2014.

These Research Schools are co-sponsored by the Heilbronn Institute.

***LMS-CMI Research Schools** aim to provide training for young researchers in core areas of mathematics. Students and post-docs can meet a number of leading experts in the topic as well as other young researchers working in related areas.*

The LMS is the UK's learned society for mathematics. Registered charity no. 252660 (www.lms.ac.uk)
The CMI is charitable private operating foundation, incorporated in the USA.

VIEWS: COMPOSITIONAL REASONING FOR COMPUTER PROGRAMS

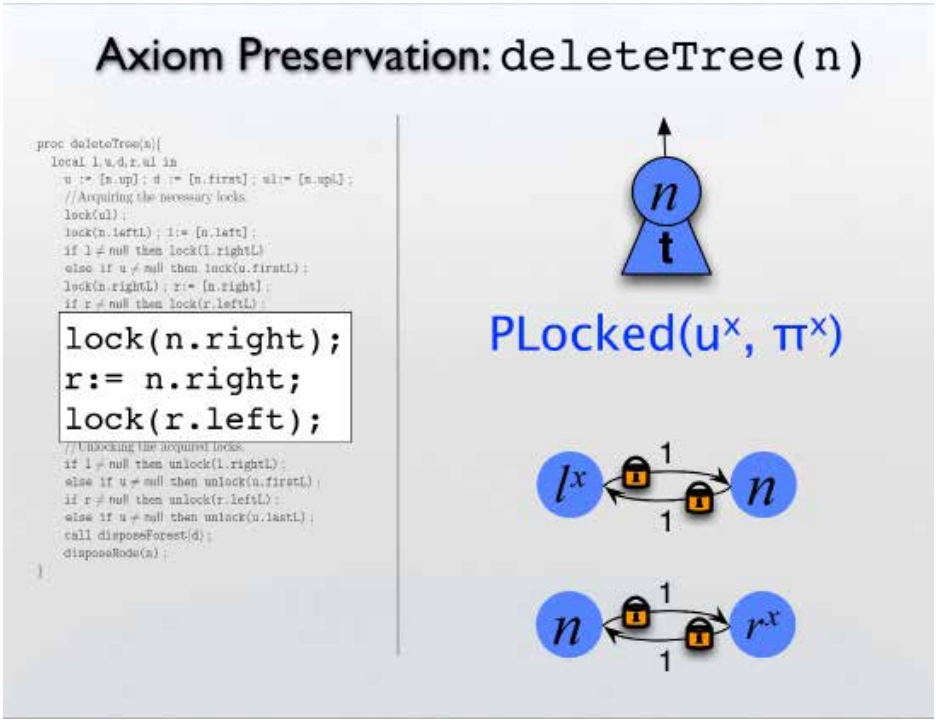
Report

The 2013 LMS/BCS-FACS Seminar was held on Tuesday 8 October 2013 at the London Mathematical Society where Professor Philippa Gardner of Imperial College London gave a talk titled *Views: Compositional Reasoning for Computer Programs*. Amongst members of the audience were Professor Gardner's research group, colleagues and collaborators, as well as prominent program verification researchers such as Sir Tony Hoare, FRS, FREng, Peter O'Hearn and Matthew Parkinson.

Professor Gardner opened her talk by introducing her research group and collaborators who contributed towards the material presented at the seminar. She gave a brief history of concurrent program verification and praised the efforts of those most influential in the development of the field.

Professor Philippa Gardner

She motivated her talk by stressing the importance of abstraction in understanding and reasoning about large computer systems. She deliberated the various levels of abstraction through an example of a client program used for manipulating mathematical sets. She contrasted the



Slide from Professor Philippa Gardner's talk *Views: Compositional Reasoning for Computer Programs*

intuitive mathematical notion of a set against a possible heap-based implementation and its representation at machine level (captured by zeros and ones in memory).

She then turned to compositional abstraction, which underlies many reasoning principles for concurrent (multi-threaded) programs. She described how a concurrent environment is abstracted in order to reason about a thread in isolation without having to know the precise concurrent context in which it will be placed. In particular, she extended the set example to reason about a program where two separate threads compete to remove the same element from a set. She then pointed out how this approach can be generalised and how these abstractions are composed to reason about a program consisting of many threads. She emphasised the significance of such modularity for reasoning about incomplete code or libraries where the context is not known.

She subsequently focused on the 'Views' framework and explained how it brings together the core principles underlying compositional reasoning systems for concurrent programs. She gave an intuitive account of various ingredients and requirements of a concurrent system:

A thread's view consists of abstract knowledge about the current state of the machine and the thread's rights to change the state of the machine. The knowledge of a thread must be stable under the operations of concurrent threads. That is, no other thread may have rights to invalidate the thread's knowledge. Conversely, no thread can have knowledge that another thread has the right to invalidate. Views are compositional; in other words, knowledge and rights may be distributed between threads and recombined.

Finally, she gave a formal definition of the generic concurrent program logic provided by the Views Framework and how it embodies the essential ingredients for sound compositional reasoning.

She clarified the various ingredients of a compositional reasoning system through a simplified example of a concurrent tree library used for representing and manipulating HTML objects. She concluded her talk by highlighting the strength of the Views Framework in providing a general framework in which a wide variety of compositional reasoning approaches can be constructed and proved sound by appealing to its general soundness result.

Azalea Raad
Imperial College London

TOMORROW'S MATHEMATICIANS TODAY

Report

On Saturday 15 February the 2014 edition of the *Tomorrow's Mathematicians Today* conference series, initiated in 2010 by Noel-Ann Bradshaw (University of Greenwich) was held at the University of Surrey. The event was organised by the Surrey Mathematics Department in conjunction with the Institute of Mathematics and Its Applications, represented on the day by Erica Tyson.

The student response was excellent, with over 30 abstracts submitted for talks and poster presentations from undergraduates at various levels of their degrees and from several Universities primarily in England, Scotland and Ireland, and a total of over 140 registered participants. Undeterred by the weather conditions, over 100 of them made it to the venue and crowded the theatres, creating an exciting and lively atmosphere of scientific interchange throughout the whole event. The opening session was the address by the keynote speaker Professor Luis Fernando Alday (Mathematical Institute, University of Oxford) whose talk *The Mathematics of String Theory* was an instantaneous success. There followed then 12 parallel sessions which members of the Surrey Mathematics Department helped chair, for a total of 27 talks, in which the

students gave a fantastic proof of their versatility, creativity and knowledge of quite advanced branches of mathematics.

The sessions were each designed to contain talks pertaining to similar subjects, associated to the name of a famous mathematician of the past. The range spanned from fluid dynamics and mechanics, logics and computing, topology, analysis and applicative aspects of mathematics, to differential geometry, knot theory, cryptography, statistics, algebra and functional analysis. The full list of abstracts and the programme can be found at the conference webpage: www.surrey.ac.uk/maths/tmt2014.

The feedback from the participants is pouring in and depicts the satisfaction of the students who had a chance to present/listen in a conference setting in many cases for the first time in their academic career. The staff attending were impressed by the quality of the presentations and by the supporting attitude of the students towards their fellows, while the latter were giving their talk or discussing their poster. The sponsors were thrilled to meet these brilliant young minds and the Surrey Conference facilities provided an ideal frame to these interactions. The student ambassadors Robyn Smith and Bethany Breed contributed a vital help to the event.

The best paper award was given to Muhammad Syafiq Johar (Imperial College London) for his talk *Rational Tangles and the Euclidean Algorithm*. The next edition will be hosted by the University of York, to whom the organising committee of TMT 2014 wishes all the very best of success.

Several institutions in addition sponsored the event: GCHQ, who awarded the best-paper prize, Taylor and Francis publisher, MedImmune, Springer publisher, GlaxoSmithKline and the London Mathematical Society through the Small Grants for Education scheme.

All the sponsors are warmly acknowledged by the TMT organising committee for their support, which has been essential to the success of the conference. The Surrey Faculty of Engineering and Physical Sciences Marketing Team, in particular Sonia Goodman and Pippa Goldenberg, provided invaluable help throughout the whole preparation and advertisement of the event.

Alessandro Torrielli
Surrey University

Some of the attendees

TEACHERS' SYMPOSIUM

Report

GCHQ, together with GFirst Local Enterprise Partnership (LEP), held its first ever Teachers' Symposium, on 31 January 2014, attended by over a hundred teachers from all parts of the country.

The aim of the event was to engage with teachers on how to encourage students to take up the study of Science, Technology, Engineering and Maths (STEM) subjects and take advantage of the exciting career opportunities such qualifications can offer.

GCHQ's Director General of Technology and Capability opened the day by emphasising the importance to GCHQ of the study of STEM subjects. He said: 'STEM subjects have always been critical disciplines at the core of GCHQ's work to safeguard the nation. GCHQ has a long association with STEM development and encouraging these subjects through its outreach programme in local schools. There's a national shortage of STEM skills, so GCHQ is really pleased to be hosting the Symposium to show some of the exciting career opportunities and pathways open to students'.

The Symposium attendees heard from a wide range of groups and speakers, all with a keen interest in promoting the study of STEM-based subjects, to give the teachers ideas about how to increase interest amongst their own students when they return to their schools and colleges.

The teachers heard from GCHQ how STEM subjects are relevant to the success of GCHQ's critical missions of protecting national security, combating serious crime and preventing cyber-attacks.

Knowledge of STEM subjects has increased the awareness of career choices for women and girls, in engineering and technology and is becoming one of the fastest growing career options. With this in mind, Catherine Hobbs, Head of Department - Engineering Design and Mathematics at the University of the West of England (a Council Member of the London Mathematical Society and the founding Chair of its Women in Mathematics Committee) spoke directly to teachers about why promoting careers in engineering and technology to girls is so important and highlighted some examples of role models together with careers information to help girls achieve success in this field.

The Institute of Mathematics and its Applications (IMA) were represented by Assistant Director John Meeson, who emphasised that 'an essential aspect of teaching mathematics is the ability to give the subject real context, so that students can understand its place in the world'.

Exciting outreach programmes were in evidence at the Symposium where Dawn Fitt, the BLOODHOUND Education Programme Delivery Director, presented some real world examples and data from the Bloodhound supersonic car which helped to bring STEM to life and excite children of all ages through the Bloodhound project.

GCHQ's long-term partners, the Cyber Security Challenge UK, were also present giving attendees information on how their programme aims to find talented people to help develop the nation's skills base in the field of cyber security. Brian Higgins, the Project Manager, said, This is a great opportunity and it's vital that Cyber Security takes a prominent role in the curriculum.

GCHQ is one of the largest employers of professional mathematicians outside of the University sector and to demonstrate why these skills are in such demand, Professor Graham Niblo of the National Cipher Challenge explained how mathematicians are creative problem-solvers and why a deep knowledge of mathematics can lead to a variety of extremely diverse careers.

Dr Catherine Hobbs

LMS PROSPECTS IN MATHEMATICS

Report

The latest *LMS Prospects in Mathematics Conference* took place at Durham University from 18 to 20 December 2013. Aiming to provide an overview of PhD-level opportunities for mathematical research at various UK universities, the conference was attended by about 50 students from all over the country.

The speakers were Tara Brendle (Glasgow), Dorothy Buck (Imperial), Edward Crane (Bristol), Gianne Derks (Surrey), Alexander Strohmaier (Loughborough), Alina Vdovina (Newcastle), Sanju Velani (York), Andrew Wade (Durham), Richard Ward (Durham) and Sarah Zerbes (UCL). In addition, Elizabeth Fisher gave a talk on how the LMS supports undergraduate and postgraduate students, and John Parker (Durham) gave an overview of various funding opportunities for PhD projects (e.g., the Doctoral Training Centres in Mathematical Sciences).

The topics covered a wide spectrum of mathematics, from what is considered 'pure' such as algebra, number theory and topology, through geometric function theory, spectral geometry, probability and stochastic processes, to what some consider 'applied' areas such as PDEs, solitons and mathematical biology. Despite this breadth, the remarkable interconnectedness between the different talks was well noted.

The participants overwhelmingly found the conference to be very informative and inspiring. Besides learning about potential PhD research areas, the more practical talks on obtaining funding and application procedures were also well received. Finally, the coffee and lunch breaks, as well as the conference dinner, offered an

Attendees

Attendees

excellent opportunity to exchange experiences and to learn more from the speakers in an informal setting.

More photographs from the conference can be found on the back cover of this Newsletter.

Norbert Peyerimhoff
Durham University

VISIT OF MARK MECKES

Professor Mark Meckes (Case Western Reserve University, Ohio) will be visiting the UK from 26 April to 11 May 2014. His research interests lie in and around the intersection of probability, functional analysis, and geometry. He will give the following lectures:

- University of Edinburgh
  Monday 28 April at 2 pm
  The magnitude of metric spaces
  (contact: Tom.Leinster@ed.ac.uk)
- University of Sheffield
  Thursday 1 May at 3 pm
  The magnitude of metric spaces
  (contact: S.Willerton@sheffield.ac.uk)
- University of York
  Wednesday 7 May at 2 pm
  The magnitude of metric spaces
  (contact: Christopher.Hughes@york.ac.uk)
- University of Bristol
  Friday 9 May at 3.30 pm
  Patterned random matrices
  (contact: J.P.Keating@bristol.ac.uk)

Further details of the visit can be obtained from Tom Leinster (Tom.Leinster@ed.ac.uk). This visit is supported by an LMS Scheme 2 grant.

VISIT OF LARA ANDERSON

Professor Lara Anderson (Virginia Tech, USA) will visit the UK in May 2014. Her interests lie in string theory, including the study of string theory moduli spaces especially those related to heterotic string theory. Professor Anderson will give the following lectures:

- Surrey University, Tuesday 21 May
- Oxford University, Monday 25 May
- Imperial College London, Wednesday 28 May

Further information is available from Jock McOrist (j.mcorist@surrey.ac.uk). The visit is supported by an LMS Scheme 2 grant.

ALGEBRAIC LIE THEORY AND REPRESENTATION THEORY

LMS-CMI Research School

Glasgow 25-29 August 2014

Organisers: Gwyn Bellamy (Glasgow) and Simon Goodwin (Birmingham)

Course outline
The school is aimed at PhD students and early postdocs wanting to learn about topics in algebraic Lie theory and representation theory that are currently of great interest. The three main courses are:

- *Rational Cherednik Algebras*. (Iain Gordon, Edinburgh)
- *Quiver Hecke Algebras*. (Andrew Mathas, Sydney)
- *Categorification in Lie Theory*. (Catharina Stroppel, Bonn)

These lecture courses will be supplemented by tutorial sessions. For further information please visit: www.maths.gla.ac.uk/~gbellamy/summer.

In the following week there will be a workshop at ICMS in Edinburgh with the same title, see www.icms.org.uk/workshop.php?id=299.

Applications: Applications should be made using the registration form available at: www.surveymonkey.com/s/GG2Y6DN. Research students and post-docs are invited to apply. Applications from those working in industry are welcome, please contact the organisers for further information. Participants are encouraged to also apply to participate in the ICMS workshop and should indicate this in their application. The closing date for applications is **11 April 2014**. Numbers will be limited and those interested are advised to make an early application.

All applicants will be contacted within two weeks after the deadline; information about individual applications will not be available before then

Fees: All research students will be charged a registration fee of **£150**. **There will be no charge for subsistence costs.**
All early career researchers will be charged a registration fee of **£250**. **There will be no charge for subsistence costs.**
All UK-based participants must pay their own travel costs. For overseas-based participants, support will be available to contribute towards travel costs.

Fees are not payable until a place on the course is offered but will be due by 30 June 2014.

These Research Schools are co-sponsored by the Heilbronn Institute.

LMS-CMI Research Schools *aim to provide training for young researchers in core areas of mathematics. Students and post-docs can meet a number of leading experts in the topic as well as other young researchers working in related areas.*

The LMS is the UK's learned society for mathematics. Registered charity no. 252660 (www.lms.ac.uk)
The CMI is charitable private operating foundation, incorporated in the USA.

BOUNDED GAPS BETWEEN PRIMES

LMS-CMI Research School

Oxford 22-26 September 2014

Organisers: Ben Green and Roger Heath-Brown (Oxford)

In a spectacular breakthrough, Yitang Zhang proved that there are infinitely many pairs of primes differing by at most 70 million. Due to further advances of Maynard and Tao and the collaborative Polymath Project, 70 million has been reduced to a few hundred. This course will introduce attendees to the mathematics surrounding these developments. There will be four lecture courses:

- *Introduction to prime number theory. ζ- and L-functions, the prime number theorem* (Andrew Granville, Montreal)
- *The Bombieri-Vinogradov theorem about distribution of primes in progressions. Introduction to sieve theory* (Kannan Soundararajan, Stanford)
- *The methods of Goldston, Pintz and Yıldırım and Maynard-Tao* (James Maynard, Montreal/ Oxford)
- *Inputs from algebraic geometry* (Emmanuel Kowalski, ETH Zurich)

These lecture courses will be supplemented by tutorial sessions.

Distinguished guest lectures will be given by Terence Tao (UCLA) and Yitang Zhang (University of New Hampshire).

Applications: Research students, post-docs and those working in industry are invited to apply. The closing date for applications is **15 June 2014**. For further information, please visit the website: www.claymath.org/events/bounded-gaps-between-primes. Applications should then be made using the registration form available via the Society's website at: www.lms.ac.uk/events/lms-cmi-research-schools.

Fees: For participants from outside Oxford (except those working in industry), fees include conference fee, accommodation, meals and conference dinner. PhD students: £150; Early-career researchers: £250. For Oxford University participants, fees include conference fee, lunches and conference dinner only. PhD Students and Early Career Researchers: £100.

For all other participants (e.g. those working in industry), fee includes conference fee, lunches and conference dinner only. Registration fee: £250. (Accommodation and evening meals can be requested at a further cost of £650.) All UK-based participants must pay their own travel costs. For overseas-based participants, support will be available on application if contribution towards travel costs is required. Fees are not payable until a place on the course is offered but will be due by 1 August 2014.

These Research Schools are co-sponsored by the Heilbronn Institute.

LMS-CMI Research Schools *aim to provide training for young researchers in core areas of mathematics. Students and post-docs can meet a number of leading experts in the topic as well as other young researchers working in related areas.*

The LMS is the UK's learned society for mathematics. Registered charity no. 252660 (www.lms.ac.uk)
The CMI is charitable private operating foundation, incorporated in the USA.

JOINT SOCIETY MEETING
with
The Royal Meteorological Society

Blackett Laboratory, Lecture Theatre 1, Imperial College London,
South Kensington Campus, London, SW7 2BW

16 April 2014

THE MATHS OF PLANET EARTH

14:00	Opening of the meeting
14:10	**Chris Jones** (The University of North Carolina) *Models come in all shapes and sizes*
14:40	**Tamsin Edwards** (University of Bristol) *Bayesian calibration of earth system projections*
15:10	**Chris Budd** (University of Bath) *Adaptive mesh methods for Data Assimilation*
15:40	Refreshment break.
16:10	**Ted Shepherd** FRMetS (University of Reading) *The role of mathematics in understanding the atmospheric circulation response to climate change*
16:40	**John Taylor** (DAMTP, University of Cambridge) *Mathematical models of phytoplankton blooms*
17:10	**Emily Shuckburgh** FRMetS (British Antarctic Survey) *The application of scientific evidence in climate-related policy*

Mathematics has always played a crucial role in modelling the weather and climate. Today, scientists and policy makers are demanding ever-more detailed information from simulations of the Earth system, and our strategy for model development requires concomitant advances in mathematics. The international programme 'Mathematics of Planet Earth 2013 (MPE2013)' is devoted to advancing research programmes in all areas of environmental and biological modelling in which maths plays a crucial role, and the organizers hope that the initiative will have a lasting impact.

In this Society Meeting of the LMS, in collaboration with the Royal Meteorological Society, presentations will be made by those who have been involved with MPE2013 in the fields of weather, climate and environmental prediction. This meeting will focus on Earth observation and Earth system modelling, and will discuss how improvements in models, and the optimal exploitation of observations, depends on advances in mathematics.

To register, please complete the online registration form: www.rmets.org/events/maths-planet-earth-0 Please contact Marcia Spencer with any questions: email marcia.spencer@RMetS.org or telephone +44 (0)118 956 8500.

This meeting is sponsored by The Grantham Institute for Climate Change, an Institute of Imperial College London and the London Mathematical Society.

INTERNATIONAL MATHEMATICS COMPETITION FOR UNIVERSITY STUDENTS

Preliminary Announcement

The 21st International Mathematics Competition for University Students, which is being co-organized by University College London and hosted by the American University in Blagoevgrad, Bulgaria, will take place from 29 July to 4 August 2014.

Every participating university is invited to send several students and one teacher. Individual students are welcome. The competition is planned for students completing their first, second, third or fourth year of university education and will consist of two sessions of five hours each. Problems will be from the fields of Algebra, Analysis (Real and Complex), Geometry and Combinatorics. The working language will be English. Over the previous twenty competitions there have been participants from over two hundred institutions in over fifty countries.

Although this is an individual event, the universities traditionally divide their participants into groups of four each. The number of students in the teams is, however, not fixed. The professor who accompanies the students is expected to be a member of the Jury.

The problems will be chosen at the Meeting of the Jury on 30 July from those received in advance by the President of the Jury, Professor John Jayne. The problems proposed should be precisely formulated and accompanied by a detailed solution. The problems should be in fields of Algebra, Analysis (Real and Complex), Geometry and Combinatorics. The problems given at the last twenty competitions can give a general idea of the level expected (see the IMC website www.imc-math.org.uk). Additional topics may be also included.

The students' work will be evaluated by Team Leaders and other Professors and Assistant Professors using criteria provided by the Jury.

Participants are invited to confirm their intention to participate, either by on-line registration or by email, by the end of May 2014, providing the following information: University: City, Country: Leader of the team (name, email address): Students (number): Mailing address: Email address: Fax.

The participants from some countries will need a visa to enter Bulgaria. Contact your travel agent or the Bulgarian Consulate in your country for details. If necessary, the organizers will post formal invitations for participation in the competition. You must begin the visa process early as it requires time.

The competition fee, which will include accommodation and meals from dinner on the 26 July to breakfast on 1 August, have not yet been finalized.

Send all confirmations of participation and arrival details to John Jayne (j.jayne@ucl.ac.uk). If you would like a copy of the competition poster email John Jayne with your postal address. For further information visit the website at www.imc-math.org.uk.

MECO39

The 39th conference of the Middle European Cooperation on Statistical Mechanics (MECO39) will be hosted by the Applied Mathematics Research Centre (AMRC), Coventry University from 8 to 10 of April 2014.

Historically, MECO was established to allow scientists in the East and West of Europe to maintain open scientific dialogue and beneficial collaborations across the Iron Curtain. Today, the meeting remains at the heart of Statistical Mechanics in Europe and, due to interdisciplinary applications, MECO attracts the attention of a much wider mathematical sciences community. The AMRC is pleased to host MECO in the UK for the first time with support from the LMS. The invited speakers include:

- Letitia Cugliandolo (Paris, France)
- Sergei Dorogovtsev (Aveiro, Portugal)
- Martin Evans (Edinburgh, UK)

- Helmut Katzgraber (Texas A&M, USA)
- Nikolai Lebovka (Kiev, Ukraine)
- Christian Maes (Leuven, Belgium)
- Anastasios Malakis (Athens, Greece)
- Victor Martín-Mayor (Madrid, Spain)
- Thomas Palberg (Mainz, Germany)
- Rudolf Römer (Warwick, UK)
- Lev Shchur (Landau Institute, Russia)
- Stefan Thurner (Vienna, Austria)
- Slobodan Zumer (Ljubljana, Slovenia)

Further information, including registration details, can be found on the website http://meco39.complexity-coventry.org/index.php. For queries, please email meco39@coventry.ac.uk . There is some financial support available for UK based research students. The meeting is supported by an LMS Conference grant.

WHITTAKER COLLOQUIUM

Professor János Pintz (Alfréd Rényi Institute of Mathematics) will give the Whittaker Colloquium at the University of Edinburgh in Lecture Theatre C of the James Clerk Maxwell building on Friday 2 May 2014 at 4 pm, entitled *Small gaps between primes and arithmetic progressions in the sequence of generalized twin primes*.

Previous speakers in the Whittaker Colloquium have included Gunnar Carlsson, Robbert Dijkgraaf, Peter Kronheimer, Philip Maini, Richard Melrose, Terence Tao and Sir Christopher Zeeman.

For further information about the Whittaker Colloquium visit the website at www.maths.ed.ac.uk/events or contact Milena Hering (m.hering@ed.ac.uk).

OPERATOR THEORY 2014

The International Workshop on Operator Theory 2014 (IWOP2014) focussing on properties of operators on Banach and on Hilbert space will be held at Queen's University Belfast from 3 to 5 September 2014. The main speakers will be:

- Jesús Araújo (Santander)
- Isabelle Chalendar (Lyon)
- Raúl Curto (Iowa City)
- Jörg Eschmeier (Saarbücken)
- Vladimir Müller (Prague)
- Jan Stochel (Krakow)

All information on the workshop is available at http://iwop2014.martinmathieu.net/ including details on registration and funding. You can also email the organiser Dr Martin Mathieu (m.m@qub.ac.uk). The meeting is support by an LMS Conference grant.

ALAN TURING: CODEBREAKER

A Life in Music by James McCarthy

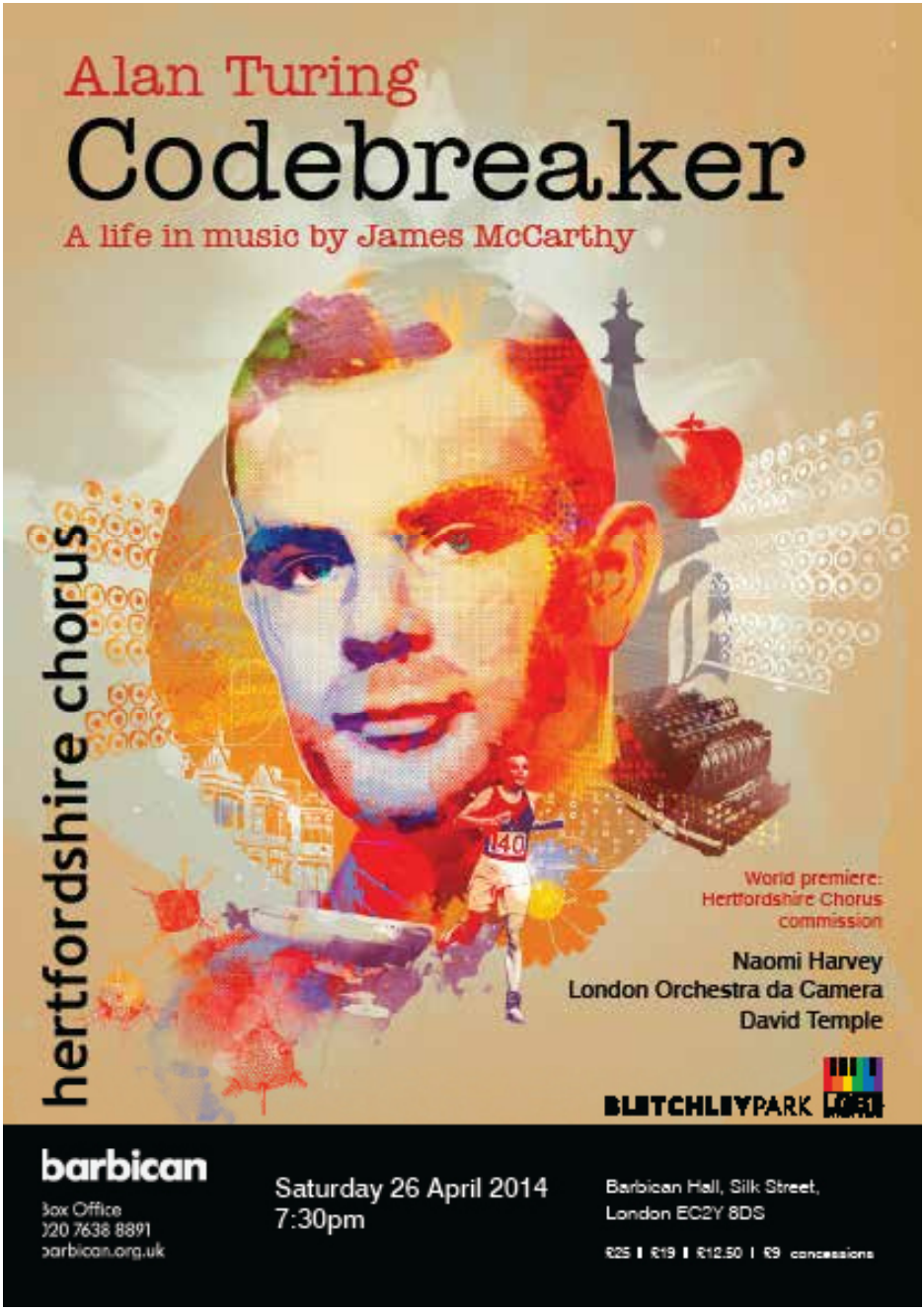
Hertfordshire Chorus will be giving the World Premiere of *Codebreaker*, a major new choral work celebrating the life of Alan Turing, in the Barbican Hall, Silk Street, London EC2Y 8DS on Saturday 26 April 2014 at 7:30 pm.

Hertfordshire Chorus commissioned James McCarthy (composer of *17 Days* - the work about the Chilean miners that took the classical music world by storm when it was premiered at the Barbican by Crouch End Festival Chorus, last year) to write the piece. The work includes settings of texts by poets Wilfred Owen, Sara Teasdale, Walt Whitman, Oscar Wilde and Robert Burns, with a soprano soloist (sung by Naomi Harvey) providing the voice of Turing's mother.

The *Codebreaker* programme is completed by:

- Mendelssohn's Hebrides Overture, *Fingal's Cave*
- Vaughan Williams's *Toward the Unknown Region*
- Beethoven's *Meeresstille und Glückliche Fahrt*

Tickets for this performance are available to members of the LMS at a special rate of **20% off the normal price**. You can buy your tickets from either http://hertfordshirechorus.ticketsource.co.uk or www.barbican.org.uk/music/event-detail.asp?ID=15497. To obtain the 20% discount you should use the discount code 888888 when booking.


Alan Turing
Codebreaker
A life in music by James McCarthy
hertfordshire chorus
World premiere:
Hertfordshire Chorus
commission
Naomi Harvey
London Orchestra da Camera
David Temple
BLETCHLEYPARK
barbican
Box Office
020 7638 8891
barbican.org.uk
Saturday 26 April 2014
7:30pm
Barbican Hall, Silk Street,
London EC2Y 8DS
£25 | £19 | £12.50 | £9 concessions


Dreams and Hopes for Late Starters
ICM 2014
SEOUL ICM 2014
INTERNATIONAL CONGRESS OF MATHEMATICIANS
August 13-21, 2014 / Coex, Seoul, Korea

HETEROCLINIC DYNAMICS AND THE EDGE OF TURBULENCE

The next *Patterns, Nonlinear Dynamics and Applications* (PANDA) meeting will be held in the School of Mathematics, University of Leeds from 11 am – 4 pm on Wednesday 23 April 2014. There will be two review/pedagogical talks:

- Claire Postlethwaite (Auckland) *Heteroclinic networks: stability, switching and memory*
- Ashley Willis (Sheffield) *Travelling waves in turbulent shear flows: their discovery and role in transition*

Further contributions of half-hour research talks on any topic within the PANDA remit are welcome, particularly offers of talks by postdocs and PhD students.

A limited amount of funding is available for the reimbursement of travel expenses. The organisers may also be able to make a contribution towards childcare expenses incurred specifically for the purpose of attending the meeting.

Contact Alastair Rucklidge (A.M.Rucklidge@leeds.ac.uk) if you would like to speak at the meeting. For further details see www.maths.leeds.ac.uk/~alastair/14_panda/index.html

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

HARMONIC ANALYSIS DAY

A one-day workshop *Belfast Harmonic Analysis Day* on abstract harmonic analysis will be held on 5 June 2014 at Queen's University Belfast. The speakers are:

- Cho-Ho Chu (Queen Mary, University of London)
- Ying-Fen Lin (Queen's University Belfast)
- Jean Ludwig (Universite de Lorraine)
- Ivan Todorov (Queen's University Belfast)

To obtain further information contact Y.-F. Lin (y.lin@qub.ac.uk) or visit the workshop webpage at https://sites.google.com/site/bhaday2014. The workshop is supported by an LMS Conference grant to celebrate new appointments.

MEMBERS' OPINIONS ..... have your say

In this April issue of the *LMS Newsletter* we are launching a Members' Opinions section. All opinions submitted to this section are strictly those of the contributor and do not necessarily represent the views of the London Mathematical Society. If you would like to respond to any of the opinions published below, or have a separate contribution which you would like published on matters relevant to mathematics please contact newsletter@lms.ac.uk. Items are accepted at the discretion of the Editor and subject to available space in any given edition. We thank Tom Leinster for being the first contributor.

SHOULD MATHEMATICIANS COOPERATE WITH GCHQ?

One of the UK's largest employers of mathematicians has been embroiled in a major international scandal for the last nine months, stands accused of law-breaking on an industrial scale, and is now the object of widespread outrage. How has the mathematical community responded? Largely by ignoring it.

GCHQ and its partners have been systematically monitoring as much of our lives as they possibly can, including our emails, phone calls, text messages, bank transactions, web browsing, Skype calls, and physical location. The goal: "collect it all". They tap internet trunk cables, bug charities and political leaders, disrupt lawful activist groups, and conduct economic espionage, all under the banner of national security.

Perhaps most pertinently to mathematicians, the NSA (GCHQ's major partner and partial funder) has deliberately undermined internet encryption, inserting a secret back door into a standard elliptic curve algorithm. This can be exploited by anyone sufficiently skilled and malicious — not only the NSA/GCHQ. (See Thomas Hales's piece in February's Notices of the AMS.) We may never know what else mathematicians have been complicit in; GCHQ's policy is not to comment on intelligence matters, which is to say, anything it does.

Indifference to mass surveillance rests partly on misconceptions such as "it's only metadata". This is certainly false; for instance, GCHQ has used webcams to collect images, many sexually intimate, of millions of ordinary citizens. It is also misguided; even according to the NSA's former legal counsel, "metadata absolutely tells you everything about somebody's life".

Some claim to be unbothered by the recording of their daily activities, confident that no one will examine their records. They may be right. But even if you feel that way, do you want the secret services to possess such a powerful tool for chilling dissent, activism, and even journalism? Do you trust an organization operating in secret, and subject to only "light oversight" (a GCHQ lawyer's words), never to abuse that power?

Mathematicians seldom have to face ethical questions. But now we must decide: cooperate with GCHQ or not? It has been suggested that mathematicians today are in the same position as nuclear physicists in the 1940s. However, the physicists knew they were building a bomb, whereas mathematicians working for GCHQ may have little idea how their work will be used. Colleagues who have helped GCHQ in the past, trusting that they were contributing to legitimate national security, may justifiably feel betrayed.

At a bare minimum, we as a community should talk about it. Sasha Beilinson has proposed that working for the NSA/GCHQ should be made "socially unacceptable". Not everyone will agree, but it reminds us that we have both individual choice and collective power. Individuals can withdraw their labour from GCHQ. Heads of department can refuse staff leave to work for GCHQ. The LMS can refuse GCHQ's money.

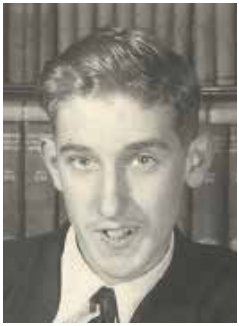
At a bare minimum, let us acknowledge that the choices are ours to make. We are human beings before we are mathematicians, and if we do not like what GCHQ is doing, we do not have to cooperate.

Tom Leinster
School of Mathematics
University of Edinburgh
28 February 2014

Editor's note: A fully referenced version of this article can be found on the author's website at www.maths.ed.ac.uk/~tl/

OBITUARIES

JOHN BAKER



Dr John W. Baker, who was elected a member of the London Mathematical Society on 21 December 1961, died on 8 November 2013, aged 75.

John Pym writes: John Baker was born on 31 March 1938 in Finsbury, London. From the Trinity School of John Whitgift, Croydon, he went to the University of Reading, leaving in 1961 with an MSc (by research). There he met his future wife, Sally,and they moved together to the University of Wales at Swansea, John as Assistant Lecturer and Sally as Research Fellow. John's initial research, and his first five papers, were in summability theory. His PhD was awarded in 1966.

At this point he switched interests to functional analysis, an area for which Swansea was renowned. John was drawn into generalisations of group algebras. His success led to his appointment at the University of Sheffield in 1969, where he was soon promoted to senior lecturer. Perhaps his most substantial achievement was in a series of three papers in the LMS Journal written jointly with Sally. He proposed what, with hindsight, was obviously the correct generalisation of the group algebra to locally compact semigroups, presenting elegant alternative characterisations of this algebra and developing its theory. He went on to write over 40 research papers. He contributed a survey to *The Analytical and Topological Theory of Semigroups* (1990), one described by a reviewer as the `most scholarly' in the book.

That remark captures one of John's invaluable qualities. If he was tasked with doing a job, he did it conscientiously and effectively. Of his research students, three have become academics with strong publication lists. He taught well everything the department asked of him. His qualities as an administrator were `rewarded' with the problems of becoming Head of Pure Mathematics.

After early retirement in 2000, John continued serving the community as a leading trustee of a Sheffield charity which exists to help refugees integrate into British society. He is survived by a daughter, Sandra, and a son, Simon.

CHRISTOPHER NORMAN

Christopher W. Norman, who was elected a member of the London Mathematical Society on 20 June 1963, died on 25 January 2014, aged 76.

Eira Scourfield writes: Chris was born on 28 April 1937 and spent his childhood in Bedfordshire. He was an undergraduate at the University of Birmingham, graduating in Mathematics in 1958, before becoming a research student at Balliol College, University of Oxford, and working in algebraic topology under the supervision of Professor Ioan M. James. He was awarded his DPhil in 1961 before taking up a lecturing position at Westfield College, University of London. He remained there until 1984 when the reorganization of the University of London saw him and seven mathematical colleagues transferred to Royal Holloway. He was promoted to Senior Lecturer in 1997 and retired in 2001.

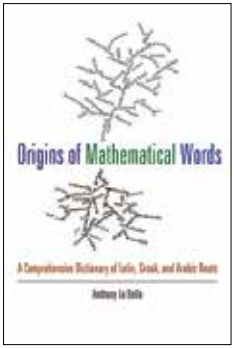
Research in algebra at Westfield College was strengthened when Dan Hughes was appointed in the mid 60's, so Chris decided to switch his research to this area. He published some thirteen research papers, mostly in algebra; his only joint paper was with Fred Piper. He had two research students. Chris became particularly interested in problems concerning canonical forms and Jordan forms and bases which culminated in three papers in the 1990's and one in 2008. In addition he wrote two undergraduate textbooks in algebra based on his lectures at Westfield College and Royal Holloway; one at first year level was published in 1986 and

another for the next two levels appeared in 2012. Chris was highly regarded as a teacher by his students, and they appreciated his exceptionally well prepared lectures, his excellent handwriting and his willingness to help them. Several students remained in contact with him for years after they graduated. He was a valued colleague, always willing to do reliably, efficiently and without fuss whatever administrative tasks were asked of him.

Chris met his wife Lucy (formerly Wyatt) when she joined the French Department at Westfield College and they married in 1969. They had one son, Timothy, and a granddaughter arrived in 2013. From 1984 the family home was in Ascot and Chris enjoyed tending his garden. He learnt to play the organ as a teenager and this interest continued throughout his life. When at Westfield College he played the organ at church services nearby, and then afterwards he was a church organist in Bracknell for 25 years. Chris became ill in August 2013 and died of cancer less than six months later.

REVIEWS

ORIGINS OF MATHEMATICAL WORDS: A COMPREHENSIVE DICTIONARY OF LATIN, GREEK, AND ARABIC ROOTS by Anthony Lo Bello, Johns Hopkins University Press, 2013, paperback, 368 pp, £32.00, ISBN 978-1421410982.



This book does what it promises, and does it well. Anthony Lo Bello is a scholar of medieval mathematics, knowledgeable in particular about the Latin and Arabic versions of Euclid's Elements. In this volume he has assembled, over a number of years, lucid and wide-ranging remarks on the etymology and history of many of the words of mathematics. Here we can learn, for instance, how a word like trihedral is formed from Greek roots, how an Arabic verb gave us English zero, and just what protractor means in Latin. The entries contain much that will interest historians of mathematics as well as the curious mathematician at whom the book is aimed.

Not absolutely everything one might expect is included. Group, ring and field do not appear; nor do random, noise or signal. Some entries feel a little too succinct, particularly when compared with their more expansive neighbours: zero, about which whole books have been written, receives just 27 tantalising words.

On the other hand, there is a good deal in this book that I don't think anyone would have expected. Two and a half pages on the prefix 'a-', for instance. I don't complain: the information Lo Bello has assembled about 'a-' is good stuff, and I was happy to read it. But it would probably not occur to most people to look up 'a-' in a dictionary of mathematical words.

Indeed, the book consistently does more than merely fulfil its promises. A good proportion of the entries contain mathematical definitions. Some are leavened with anecdotes; some with mathematical discussions; others with digressions on other subjects. Lo Bello draws attention in the Preface to the discursive remarks on usage, prose style, and liberal education which appear throughout the book. Some are witty, some provocative. Not all readers will be persuaded, I suspect, by Lo Bello's regular strictures concerning the formation of new words. The effect occasionally seems a bit heavy. The entry on ANOVA contains one sentence about ANOVA and six about the evils of acronym proliferation.

There are also some entries additional to the stated purpose of the book: words for which there seems little or nothing to say about Greek, Latin or Arabic roots – or which are scarcely mathematical words at all – and whose point is simply to introduce a digression. In this category we find cant, Dido, gender, Gibbon, j, PowerPoint, and many more. Whether this discursive material is welcome or unwelcome must be a matter of taste; those who don't want to read it don't have to.

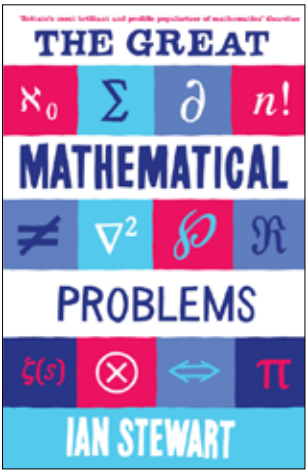
I noticed a few typing errors, mainly in the preface. Also, and unfortunately, the type used

for Arabic words is quite inadequate: small, fuzzy, and on some pages only just legible. By contrast, Greek and Hebrew words appear in large, bright types throughout.

These are minor complaints. This book is well-conceived, and it fills a gap on the shelves; I don't think there has been a dictionary of mathematical words of this kind since 1994. On the whole it is well produced; it even has an attractive cover. I warmly recommend it.

Benjamin Wardhaugh
All Souls College, Oxford

THE GREAT MATHEMATICAL PROBLEMS by Ian Stewart, Profile Books, 2013, 352 pp, £15.99, ISBN 978 1 84668 1998.



Popular maths writing has undergone something of a renaissance in the last 20 years. It is no longer a niche interest (or, at any rate, now occupies a larger niche): several pop maths books are published every year. Whether this is due to the public's increased regard for maths in the computer age, or to its appetite for the image of the mathematician as tortured artist I cannot say. The point is that maths books for the general reader are no longer a novelty; to be successful they must offer something new. With full-length books now written about many famous theorems and mathematicians (especially the eccentric ones), I must admit I did wonder what Ian Stewart's latest book, The Great Mathematical Problems, had to offer.

Stewart's book has only one chapter for each of its 15 'great problems' and so cannot hope to provide the depth of background given in whole books about problems such as the Poincaré conjecture or the question of P vs. NP. After reading a few chapters it soon became apparent that this objection doesn't matter, because the book's subject is not really the problems themselves. Rather, it is an unusually good exposition of how mathematical progress takes place in practice.

Each chapter introduces the necessary background to state a 'great problem' with some level of formality, but also describes its generalisations and consequences, as well as how the problem was decided or how work on its solution has progressed (many of Stewart's problems are unsolved). The great problems are presented here as a catalyst for a mathematical journey whose destination is often less important than how we got there.

Ian Stewart is widely regarded as Britain's most brilliant expositor of maths. He has a writing style that is breezy and good-humoured without being devoid of real content. Having both qualities is rare in popular maths writing. Stewart's insights as a mathematician as well as, as a writer, are crucial to his style. He has a particular gift for illuminating analogies – a favourite was his description of formal linear combinations of subvarieties in terms of the assertion that you can't add apples to oranges. These analogies enable Stewart to present highly complex topics such as the Hodge conjecture at a level that a bright school student can understand. He also cleverly organises the problems so as to avoid any one chapter containing an overwhelming amount of new mathematics.

With such a book one always worries that old ground will be re-trod, and indeed some topics included here will be familiar to not only the mathematician, but also anyone who has read more than one or two pop maths books. This is a minor quibble though and is more than compensated for by Stewart's fresh presentation of the great problems as a lens for the topic of progress in maths. In his first chapter Stewart writes "One of the aims of this book is to show that mathematical research is thriving, with new discoveries being made all the time". At this it certainly succeeds.

Tom Harris,
University of Southampton

CALENDAR OF EVENTS

This calendar lists Society meetings and other mathematical events. Further information may be obtained from the appropriate LMS *Newsletter* whose number is given in brackets. A fuller list is given on the Society's website (www.lms.ac.uk/content/calendar). Please send updates and corrections to calendar@lms.ac.uk.

APRIL 2014

1–5 Ischia Group Theory 2014, Naples, Italy
2–4 Distinguished Lecture Series 2014, Heilbronn Institute, Bristol
7–10 British Mathematical Colloquium, Queen Mary, University of London (434)
8 The Mathematics of Brain Dynamics, Birmingham (434)
8 LMS Meeting at the BMC, Queen Mary, University of London (435)
8–10 MEC039—Middle European Cooperation on Statistical Mechanics, Coventry University (435)
9 APT 50th Anniversary Special Lectures, Sheffield (434)
11–12 Integrable Models, Conformal Field Theory Meeting, University of Glasgow (434)
14–17 Kent Spectral Theory Meeting, Canterbury (433)
14–17 LMS Invited Lecturer 2014, University of East Anglia (435)
16 Joint Society Meeting with the Royal Meteorological Society, Imperial College London (435)
22 Atiyah85 Meeting, Oxford (434)
23 Heteroclinic Dynamics and the Edge of Turbulence, Leeds (435)
23–25 Probability, Analysis and Dynamics, Bristol (434)
23–25 Young Functional Analysts' Workshop, Lancaster University (433)
25 Women in Mathematics Day, London (435)
28–30 BAMC 2014, Cardiff University (434)
28–1 May Probability and Statistics Research Students Conference, Nottingham (431)

MAY 2014

2 Whittaker Colloquium, Edinburgh (435)
9 Geometry Day V, King's College London (434)
15–17 Norrie Everitt Memorial Meeting, Cardiff (432)
19–21 Wales Mathematics Colloquium, Gregynog Hall, Powys (434)
21 LMS-Gresham College Joint Meeting, London (435)

JUNE 2014

5 Belfast Harmonic Analysis Day, Queen's University Belfast (435)
16 Midlands Regional Meeting, Loughborough (435)
16 Scattering Theory and Wave Equations Workshop, Loughborough (435)
23–27 Free Boundary Problems: Theory and Applications INI Conference, Cambridge
30–4 Jul Groups, Numbers, and Dynamics INI Workshop, Cambridge
30–5 Jul Building Bridges, LMS-CMI Research School, Bristol (434)

JULY 2014

4 Hardy Lecture, LMS Meeting, London
4 LMS Graduate Student Meeting, London
7–11 An Invitation to Geometry & Topology Via G2, LMS–CMI Research School, Imperial College London (435)
13–15 Modelling in Industrial Maintenance and Reliability IMA Conference, Oxford
23–25 ISSAC 2014 Kobe University, Japan
29–4 Aug International Mathematics Competition for University Students, Blagoevgrad, Bulgaria (435)

AUGUST 2014

12 & 14 International Congress for Women in Mathematics 2014, Seoul, Republic of Korea (433)
13–21 ICM 2014, Seoul, Republic of Korea (435)
17–19 Mathematical Cultures Conference, De Morgan House, London (417)
25–29 Algebraic Lie Theory and Representation Theory, LMS–CMI Research School, Glasgow (435)

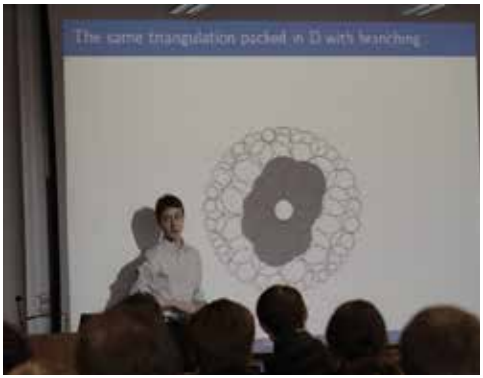
SEPTEMBER 2014

3–5 Jordan Geometric Analysis and Applications, Queen Mary, University of London (432)
3–5 Operator Theory Workshop, Queen's University, Belfast (435)
6 Mathematics and the First World War, LMS Meeting, London (435)
22–26 Bounded Gaps Between Primes, LMS–CMI Research School, Oxford (435)

LMS FUNDED MEETING
LMS PROSPECTS IN MATHEMATICS

Durham University 18–20 December 2013

(report on pages 24 and 25)



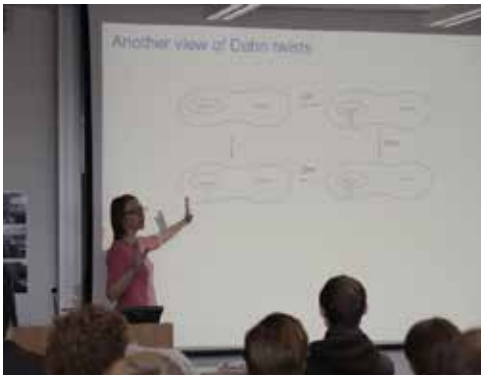
Edward Crane (Bristol)
Circle packings, conformal mappings, and probability

Sarah Zerbes (UCL)
The world of modular forms

Alina Vdovina (Newcastle)
Groups, graphs, knots, surfaces and buildings

Andrew Wade (Durham)
Probability theory and stochastic processes

John Parker (Durham)
The PhD application process



Tara Brendle (Glasgow)
Braids, palindromes, and mapping class groups