LMS 150TH ANNIVERSARY LAUNCH

EMS Presidential Toast

Dear colleagues, dear friends,

Time is late and the cake is ready, so I will be brief. Coming to a birthday party, one is aware that not all the birthdays are the same. Some have a human dimension, some go far beyond. One hundred and fifty would be fit for a rather healthy elephant, or maybe a mighty whale. Of course, it is not the age itself which matters, rather the wisdom which comes with it. In the case of the London Mathematical Society it raises no doubts. It had not only a brilliant childhood and youth – there is no need to go to detail after we have listened to the talk of Frances Kirwan – but it remains equally strong nowadays, and I dare to say that it reached the stage of mature wisdom which your friends across the water respect, enjoy, and admire. Mentioning how the LMS looks

Pavel Exner, President of the European Mathematical Society and Terry Lyons, President of the London Mathematica Society

LMS 150th Anniversary birthday cake

from outside of this island brings me naturally to the European Mathematical Society, on behalf of which I am speaking here. It is our common home, and I assure you that it is a complicated building which bears on many columns, very different ones. Of those the LMS is one of the oldest, and also the central and most solid ones. With all that in mind I want to congratulate you at the occasion of the anniversary in the name of all the European mathematical community and to propose a toast. Its idea is similar to what Terry Lyons said in his opening address and what resonated through the programme: another glorious period of a hundred and fifty years!

Thanks again for a wonderful day.

Pavel Exner
President, European Mathematical Society

SOCIETY MEETINGS AND EVENTS

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No. 445 March 2015

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LMS 150TH ANNIVERSARY LAUNCH

Report: view from a sixth-form student

On 5 December 2014 I received an invitation to the London Mathematical Society 150th Anniversary launch event, and after then, I had been excitedly counting down the days until 16 January 2015.

Having been slightly unsure of what to expect, I left the day feeling quite literally enlightened! Tucked away down a somewhat unassuming street was Goldsmiths' Hall, home to the day's proceedings, and what I can only describe as being utterly lush - quite a fitting setting for such a significant event.

We were subject to seven entirely different yet fascinating talks, from mathematical debates and formulae, to its role in TV and cinema, to the history of the Society. If I'm being completely honest, the thought of whether or not I would still be able to feel my legs after so many talks did cross my mind, however by the end I found myself quite sad that it had finished!

There really was something for everyone. For all the young and the young at heart there was Steve Thompson, showing us the role that mathematics plays within TV, especially in Dr Who, and Andrew Blake presenting the evolution and creation of the 'X-box Kinect'. For the maths buffs there was Professors Nigel Hitchin

Steve Thompson
Playwright and Screenwriter

and Robert Calderbank discussing the different approaches to maths (now this may just be me being rather ignorant or the teenager that I am, but I had always thought that within maths, there is always a definite answer, but apparently this simply isn't true), and how different Practitioners developed theories and functions. For the cinema lovers there were talks by Rob Pieké, giving us a peek into the ridiculous amount of mathematics and engineering that go into creating steam, dust, water, smoke and clouds, something that seems so simple and so abundant in films, yet is so incredibly time consuming, and James Reid, showing us

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the amazing visual effects his company Milk creates, and how they are done, finally showing how what is quite possibly my most favourite scene from any film ever was created! And finally there was Dame Frances Kirwan, sharing the Society's path from creation to its 150th anniversary, the whole event of which was presented quite fabulously by Maggie Philbin herself!

For me as a young person having to start thinking about careers, like so many of us out there, the event was most definitely an eye-opener to the enormous range of careers that mathematics can open up to you! And whilst I will not forget the event in anytime soon, it has, annoyingly, made my decision about what to study at university rather a lot more difficult......

Robert Pieké
Research Lead, Moving Picture Company

Milly Parry
Hills Road Sixth Form College, Cambridge

LMS 150TH ANNIVERSARY
LMS NORTHERN REGIONAL MEETING
Department of Mathematics and Statistics, Lancaster University
7 April 2015

2.00 pm	Opening of the meeting
	Peter Neumann (Oxford)
3.00 pm	**Dennis Sullivan** (SUNY, Stony Brook)
4.00 pm	Tea/Coffee
4.30 pm	**Ieke Moerdijk**
	(Radboud University Nijmegen/Sheffield)
6.00 pm	Reception and 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, visit the website at www.lancaster.ac.uk/maths/research/homotopical/.

The cost of the dinner will be approximately £30, including drinks.

The meeting forms part of a workshop on *Homotopical Algebra and Geometry* from 7 - 11 April 2015. The speakers at the workshop include: D.-C. Cisinski, V. Ginzburg, M. Gross, I. Grojnowski, V. Hinich, D. Joyce, A. King and M. Livernet. For further details visit the website above or contact the organiser (j.grabowski@lancaster.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.

$|b\ s\ h\ m|$

LONDON
MATHEMATICAL
SOCIETY
150 YEARS

The BSHM - LMS 150th Anniversary

De Morgan Day

**Date
9th May
2015**

De Morgan House, Russell Square, London
(nearest tube: Russell Square)

Programme

10.00	Arrival and Coffee
10.30	Society Meeting
	Adrian Rice, *An Introduction to the Life and Work of Augustus De Morgan*
11.30	Coffee
12.00	**Sloan Despeaux,** *Augustus De Morgan's 'Budget of Paradoxes'*
1.00	Lunch
2.00	**John Heard,** *Augustus De Morgan and the Early History of the London Mathematical Society*
3.00	**Ian Stewart,** *Augustus De Morgan and George Boole*
4.00	Tea
4.30	**Wilfrid Hodges,** *The Influence of Augustus De Morgan*
5.30	Reception
7.00	Dinner (venue tbc)

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150TH ANNIVERSARY LAUNCH DAY

Report: view from a mathematician

The main entrance to the Goldsmiths Hall is easy to miss despite the grandeur of the building: you have to look up to the portal. A Hall has been on the site since 1339, although the present building dates from 1835 – a little older than the LMS. Dignified and proud of its heritage: a fitting venue for the Society's 150th birthday celebration.

On ascending the grand red-carpeted staircase guests were ushered into the Exhibition Room (a virtual tour of the building is at www.the-goldsmiths.co.uk), with an opportunity to meet old friends and inspect some impressive pieces of gold- and silverware. As 2:00 pm approached we were invited to drift into the main Livery Hall, disappointingly not led by liveried trumpeters in gold brocade and wigs.

It was then a matter of choosing economy or Club class: normal lecture-room type chairs or (nearer the front) wooden chairs with upholstered seats. The Hall was indeed impressive,

with Corinthian pilasters, red velvet curtains and highly-decorated moulded ceiling, together with marble busts of Georges III and IV.

The event was opened by the LMS President Terry Lyons who showed that the previous day's business in the House of Commons included an Early Day Motion congratulating the LMS on its 150th Anniversary, national recognition indeed. He pointed out that mathematics is so much embedded in everyday life that its contributions are overlooked: part of the mission of the LMS in this 150th year is to publicise that mathematics is everywhere for everyone. He gave a succinct overview of the successes of mathematics in the last 150 years, in particular as reflected in the membership and activities of the LMS.

The floor was then taken by Maggie Philbin, TV presenter and creator of the award-winning *TeenTech* initiative that runs one-day events introducing young teenagers to the wide range of career options in STEM subjects. She

The audience in Goldsmith's Hall

Terry Lyons, LMS President

reminded us that the afternoon's events were being streamed live online, and (a first for an LMS meeting), and that there was also a Twitter presence with input invited from all and sundry – although preferably not in that medium from those already in the hall. She also welcomed a group of young people from a Coventry school who were here to help spread the message that there is lots of fun mathematics in technology.

The first speaker was Steve Thompson, screenwriter for *Doctor Who* and *Sherlock* among other TV shows. A former mathematics teacher, he is continually seeking new ideas to put into his plots. A recent inspiration was Edwin Abbott Abbott's classic book *Flatland* exploring modes of living in different dimensions; hence the (naturally invisible) *Dr Who* monster that reduced to two dimensions everything it touched. There was also the evil telepath whom the Doctor thwarted by cutting up his own mental plans into sections and transmitting them separately, inspiration here being the old problem of transporting a wolf, goat and cabbage safely across a river in stages in a small

boat. These and plot lines were illustrated by entertaining cuts from the films. An earlier idea to choose a random topic from a mathematics textbook index had been less successful, Steve admitted, leading to technical troubles with a 'parametric engine'. After this presentation, Maggie put out a call for the Meanest Mathematical Monster: more on that below.

Things became a little more down to earth with Nigel Hitchin's talk on *Creativity, Curiosity and Discovery*. Beginning with the provocative question of when Pythagoras' Theorem (so-called) is ever used in real life, he explored the age-old question of whether mathematics is *invented or discovered*. Many mathematicians feel their research is a process of discovery, but Hitchin is personally not so sure: did Fermat's Last Theorem exist at the time of the dinosaurs? Bertrand Russell, viewing mathematics as a process of logical deduction from axioms, famously asserted that mathematics may be defined as the the subject in which we never know what we are talking about, nor whether what we are saying is true. Simon Donaldson was quoted as saying perceptively that as mathematicians we feel we discover, but we invent how to organise our knowledge, while Michael Atiyah's view is that mathematics can be seen as the science of analogy.

After these philosophical flights the talk

Nigel Hitchin
University of Oxford

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Maggie Philbin with some of the younger audience members

turned to the interplay of analogy and intuition in, for example, the generalisation of Euclidean distance to high dimensions. It was disappointing to learn that scans show brain activity associated with Eureka moments is inhibited by coffee, contrary to Erdős' dictum about mathematicians being machines for turning coffee into theorems. Curiosity plays a major role in mathematical discovery (or invention): complex numbers led to Hamilton's quaternions, once much derided as a dead-end but recently coming into their own and profitably used by Nigel Hitchin in his own research.

This insightful reflection on mathematical thinking was followed by an onslaught of smoke, water, fire and plenty of explosions in the hands of Rob Pieké of the *Moving Picture Company* (MPC). These are cool things to work with electronically: there is strong correlation between number of explosions and box-office take in any given movie. Of course, mathematics lies behind all this, and Rob showed how components of the governing Navier-Stokes equations for fluid flow are realized voxel by voxel (= 3D pixel) in computer simulation,

with adjustments for obstruction effects at boundaries etc. He conveyed well the hands-on feeling and excitement of converting the partial differential equations into realistic on-screen mayhem, while looking to anticipate the 'next big thing' in visual effects.

It was then time for an extended tea-break, though any expectation of the catering matching the décor was quickly dashed: the coffee and biscuits were standard issue, although very welcome nonetheless. There was plenty of opportunity to circulate, meet old friends and admire the gold- and silverwork again.

On our return to the Livery Hall the first event was the description by three young people from Coventry of what for them would make the Meanest Mathematical Monster. It was hard to catch all the details, but one idea that stood out was to enable the monster to tamper with the laws of probability to increase its chance of survival – original indeed!

The next speaker was Andrew Blake of *Microsoft Research* who talked about the challenges in enabling computers to recognise human forms: how to spot that a face in a crowd is indeed a face, or that a jumbled heap

Andrew Blake
Head of Microsoft Research Cambridge

of shapes and shadows is a couple of couch-sprawled figures watching television. Of much topical interest is the question of self-driving cars recognising objects such as pedestrians in front of them (and stopping, of course). Apart from these practical applications, automated human-recognition is crucial for the art of motion-capture in computer games.

After describing how in the cause of science presentation she had undergone the frightening experience of sitting in a suitable equipped driverless car heading straight for a brick wall (no danger, naturally), Maggie Philbin went on to introduce Robert Calderbank of Duke University, USA and leading expert in coding and information theory. Emphasising the false distinction between 'pure' and 'applied' mathematics, he pursued the notion of mathematics as the search for patterns, which often precede theory and calculations. He showed an extraordinary series formula due to Ramanujan around 1910 enabling rapid calculation of digits of π, just one of many such visionary formulae for which proofs were found only recently. The simple picture of the diagonal

Robert Calderbank
Duke University

of a square led the ancient Greeks to confront the existence of non-rational numbers, while more mind-boggling patterns, obtainable only by the use of computers in modern times, inspire the theory of Kleinian groups as brought out in the beautiful book *Indra's Pearls* co-authored by Caroline Series (present in the audience). Hamilton's quaternions, made another appearance, this time as 2 x 2 complex matrices exploited in an original yet very simple way by Siavash Alamouti to enhance accuracy of wireless transmission and reception as used in mobile phone technology. If you want to calculate, predict and explore the way the world works, said Professor Calderbank, you need mathematics.

We were then back in the world of explosions, snakes and creepy liquids as James Reid, Head of Effects (excellent job title!) at *Milk VFX*, responsible for visual effects for *Dr Who* and *Sherlock* as well as a range of movies, showed how effects and textures are built up in layers from different components. At school he had been undecided between

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James Ried, Head of Milk Visual Effects

Mathematics and Art, but did a degree in Engineering and moved into computer animation that involved all three. Effects he demonstrated ranged from spectacular (blowing up the Houses of Parliament) to the ghostly (spirits in the forest) although most mathematical content was left implicit. Maggie Philbin asked how long the Houses of Parliament sequence had taken to construct: days? weeks? The answer was months.

Having been thoroughly blown to pieces, hurled into space or trampled by armies several times during the afternoon the audience was able to relax a little for the final talk in which Frances Kirwan, former LMS President, reviewed the early days of the Society with a particular focus on the activities of women members, then and subsequently. Prominent in the early days was Ada Lovelace, daughter of Lord Byron, student of Augustus De Morgan (founder of the LMS) and co-worker with Charles Babbage. Many of the leading figures of Victorian mathematics soon became members (Cayley, Sylvester, Maxwell – although the latter was

never President), while early female members included Charlotte Scott and Sophie Bryant. The former took the Cambridge degree examinations and would probably have been ranked 8th Wrangler had women been awarded degrees at that time, after which she went to the USA and took a prominent role at Bryn Mawr College and in the American Mathematical Society, while the latter was the first woman to publish in the *Proceedings of the LMS*. The LMS was not the first national Mathematical Society on the scene: it was beaten by a few months by the Moscow Mathematical Society, and by several decades by its Dutch counterpart. There had also been a society in Hamburg founded in 1690 although it no longer exists; likewise the Spitalfields Mathematical Society (founded 1717) preceded the LMS but was absorbed into the Royal Astronomical Society in 1846. The Spitalfields Society (membership restricted to square numbers: originally 64 and later fluctuating between 9 and 81) seems to have had some turbulent times, maybe not unconnected to the custom of conducting business

Guests at the reception

Frances Kirwan, University of Oxford

over a pint or two: we were shown the words of their Drinking Song. Augustus De Morgan instigated a more sober approach for the LMS (water only), but Professor Kirwan pointed out that the LMS had since become more flexible, and we were encouraged to enjoy the refreshments now awaiting us in the other rooms.

Maggie Philbin closed the proceedings by encouraging all those watching, tweeting or otherwise aware of the event to join in the website competitions, and to promise to let everyone know about the 150th anniversary of the LMS, to inspire young people and to try to stop radio and TV presenters (who should know better) saying with pride that they were never good at mathematics at school.

It was then some relief to stand up from the deceptively upholstered chairs and move next door to sample the drinks and excellent canapés as well as a piece of the splendid LMS birthday cake, and to welcome the short speech of good wishes from Pavel Exner, the new President of the European Mathematical Society. It had been a long afternoon, but well organised and, although intentionally light on mathematical content, encouraging and consciousness-raising: we all need to use this Anniversary Year to show the world that mathematics is everywhere and for everyone.

David Chillingworth
Southampton University

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LMS 150TH ANNIVERSARY HONORARY MEMBERS 2015

As a part of the celebrations to mark the LMS 150th Anniversary, it is expected that Council will recommend the election of a larger than normal number of honorary members this year. Members are encouraged to suggest eminent mathematicians, based overseas, who may be candidates for honorary membership.

Members making a suggestion are asked to send a short (no more than one side) case for the nomination to Duncan Turton (duncan.turton@lms.ac.uk) by **15 March 2015**.

150 ⚥

It all adds up:
Celebrating 150 years
of women across the
mathematical sciences

14th-17th April 2015

Mathematical Institute, University of Oxford

The LMS 150th Anniversary Women in Maths event

Tuesday 14th April and Wednesday 15th April: talks and workshops for school students.

Thursday 16th April and Friday 17th April: for mathematicians and mathematical scientists from **undergraduates to professors**, and including lectures, panel discussions, talks, posters, and time to meet others.

Registration: free for students, £5 for others.

Limited funds available for travel costs.

Limited free accommodation and limited free places at the conference dinner on Thursday 16th April (first come, first served).

Prizes for the best posters by students and postdocs.

(Left: Layal Hakim, winner of the best poster competition in 2014.)

For the programme, for registration, to offer a talk or to express interest in submitting a poster, see

www.maths.ox.ac.uk/events/conferences/women-maths

#italladdsup2015

LONDON
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150 YEARS

Photographs by Jonathan Tickner Photography

Oxford
Mathematics

CELEBRATING 150 YEARS OF THE LONDON MATHEMATICAL SOCIETY

LONDON
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SOCIETY
150 YEARS

The following meetings and events are part of the year-long programme celebrating the 150th LMS Anniversary in 2015.   Full details of the anniversary programme of activities are available on the LMS website at www.lms.ac.uk/2015.

March - June

LMS Invited Lecture: Michael Shapiro
16-20 March, Durham University
Celebratory Day at B(A)MC
1 April, University of Cambridge
(see page 25)
Enhanced Northern Regional Meeting
7-10 April, Lancaster University
(see page 4)
LMS-CMI Research School
Statistical Properties of Dynamical Systems
13-17 April, Loughborough University
Women in Maths Celebration: It All Adds Up
14-17 April, University of Oxford
(see page 12)
**Exhibition of LMS Members'
Correspondence from the Archives of the
Royal Society**
1 May - 31 July 2015, The Royal Society,
London
Joint LMS-BSHM De Morgan Day
9 May, De Morgan House, London
(see page 5)
LMS-Gresham Lecture: Reidun Twarock
20 May, London
(see page 28)
Anniversary Dinner
18 June, Goldsmiths' Hall, City of London
Royal Society Summer Science Exhibition
30 June – 5 July, London

July - September

LMS-CMI Research School
*Regularity and Analytic Methods in
Combinatorics*
1- 5 July, University of Warwick
**LMS Meeting and Hardy Lecture:
Nalini Joshi**
3 July, London
LMS-CMI Research School
Developments in Modern Probability
5-10 July, University of Oxford

Enhanced Midlands Regional Meeting
8-10 July, University of Warwick
Durham Symposium
*Permutation Groups and Transformation
Semigroups*
20–30 July, Durham University
Durham Symposium
*New Moonshines, Mock Modular Forms and
String Theory*
3-12 August, Durham University
**Young Researchers in Mathematics
Conference**
17-20 August, University of Oxford
LMS-CMI Research School
Diophantine Equations
15-19 September, Baskerville Hall,
Hay-on-Wye
(see page 22)
Computer Science Colloquium
17 September, The Royal Society, London
**Joint Anniversary Mathematical Weekend
with the European Mathematical Society**
18-20 September, University of Birmingham
Open House
19-20 September, De Morgan House, London

October - December

Bloomsbury Festival,
22-25 October, London
AGM and Annual Dinner
13 November, London
Joint meeting with the IOP and RAS
21-22 November
**Mathematics Festival @ The Science
Museum**
24-29 November, London
**Joint Meeting with the Edinburgh
Mathematical Society**
10-11 December, ICMS, Edinburgh
**Enhanced South West and South Wales
Regional Meeting,**
14-17 December, University of Southampton
LMS Prospects in Mathematics
15-16 December, Loughborough

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LMS 150TH ANNIVERSARY

Queen of the Sciences: A Celebration of Numbers and the London Mathematical Society

**Monday 2 February to
Monday 14 December 2015**

**University College London,
Gower Street, London WC1E 6BT**

In 2015 the London Mathematical Society, closely associated with UCL since its foundation, is 150 years old. We celebrate the anniversary with an exhibition of documents and correspondence from important figures such as Augustus de Morgan, alongside items from Special Collections that represent the numbers 1-9.

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LMS LIBRARY AT UNIVERSITY COLLEGE LONDON

Registering and Renewing

Members of the Society are reminded that they may register as users of the University College London (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.

Please note that, for licensing reasons, use of the Library at UCL does not include remote electronic access to journals and articles. To check the listings of electronic journals available to visitors, before your visit to the Library, use Explore http://sfx.ucl.ac.uk/sfx_local/az/walkin).

To Register/Renew (in person)
Please complete the application form (which can be downloaded from www.ucl.ac.uk/library/docs/borrowerform) 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/docs/borrower-form) 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.
Telephone: 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.

Please note that 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.

Opening hours

	Assistance Desk	Self Service	Reading Rooms
Monday	09:30 - 20:45	Open from 08:45	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 21:00	Close at 21:00
Sunday	Closed	11:15 - 20:45	11:00 - 21:00 (holders of UCL Library Cards only)

Please note:
• During the weekends and evenings, the Library is open principally to offer book loans and to handle related queries. For all other queries, please contact a member of staff during office hours (www.ucl.ac.uk/library/help).

• During the year, the opening hours may change. Please check the Science Library website before travelling (www.ucl.ac.uk/library/sites/science#open).
For further information about the Society's Library visit www.lms.ac.uk/library/lms-library.

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THE UNIVERSITY OF WARWICK · DIMAP · erc · CMI · Heilbronn Institute *for* Mathematical Research · LONDON MATHEMATICAL SOCIETY 150 YEARS

REGULARITY AND ANALYTIC METHODS IN COMBINATORICS

LMS-CMI Research School
1-5 July 2015, University of Warwick
Organisers: Peter Keevash, Daniel Kráľ and Oleg Pikhurko

Course outline

The school will cover three interlinked discrete mathematics topics with computer science applications, which all saw exciting developments in the last few years: the Regularity Method, Limits of Combinatorial Structures, and Property Testing.

The three main lecture course topics are:
• *Regularity Method* (**David Conlon**, Oxford)
• *Limits of Combinatorial Structures* (**Christian Borgs** and **Henry Cohn**, Microsoft)
• *Property Testing* (**Asaf Shapira**, Tel-Aviv).

These lecture courses will be supplemented by tutorial sessions.

The school will also include three more generally focused talks given by:

Noga Alon (Tel Aviv)
Christian Borgs (Microsoft)
Ben Green (Oxford)

The school is collocated with the 25th British Combinatorial Conference.

For further information please visit:

www2.warwick.ac.uk/fac/sci/maths/people/staff/daniel_kral/school15

Applications: Applications should be made using the registration form available via the Society's website at: www.surveymonkey.com/s/WXTVKYD Research students, post-docs and those working in industry are invited to apply.

The closing date for applications is **1 April 2015**. Numbers will be limited and those interested are advised to make an early application. All applicants will be contacted within three weeks after the deadline.

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 **£200**. **There will be no charge for subsistence costs**.

All other participants (e.g. those working in industry) will be charged a registration fee of £250 plus the full subsistence costs (£340) **£590** in total.

All UK-based participants must pay their own travel costs. For overseas-based participants, some 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 6 May 2015.

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.

ANNUAL ELECTIONS TO LMS COUNCIL
February 2015

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 1 May 2015** 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 2015**. 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 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 e-mail 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.

The slate proposed by 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.

NATIONAL SCIENCE FOUNDATION

The news is not official yet, and many details have not been determined, but it appears that the US National Science Foundation-funded *US Institute for Mathematics and Its Applications* at the University of Minnesota will be closing its doors within a couple of years, and its sister institute the *Mathematical Biosciences Institute* at Ohio State will not continue much longer in its present form. The IMA had undergone a site visit in the autumn of 2014 resulting in a recommendation for continued funding from the National Science Foundation (NSF). This is why the oral communication to the IMA (no longer funding it after two years of ramp-down) was met by surprise and shock. It has probably to be seen against the background of severe budget cuts that the Division of Mathematical Sciences had to absorb in recent years.

Mathematicians who profited from participation in IMA programmes have set up a petition urging the NSF to reconsider its decision. More information can be found in the editorial of the last *ICIAM Newsletter* (pp 2-3): www.iciam.org/News/ICIAMnewsletter2015janopt.pdf.

EUROPEAN NEWS

EMS at 25

In autumn this year, the European Mathematical Society will celebrate 25 years since its foundation. Following a kind invitation from the Institut Henri Poincaré, the EMS will mark this occasion with a one-day meeting on 22 October 2015, in Paris. It will be an opportunity not only to look back, but to discuss future challenges for the European mathematical community.

Nominations sought for EMS prizes

The European Mathematical Society asks for nominations for the prizes to be awarded at the 7th *European Congress of Mathematics* in Berlin in July 2016. These are the ten EMS prizes for young mathematicians, the Felix Klein Prize in applied mathematics and the Otto Neugebauer Prize in the history of mathematics. Go to www.euro-math-soc.eu/prizes-european-mathematical-society for more details.

Juncker plan cuts

The new European Commission has published a draft of its planned investment package to revive European economies. While the intent may be laudable, it is less encouraging to see where the money is taken from. Horizon 2020 is set to lose 2.7 billion, and even leading Excellent Science programmes will be hit: the European Research Council by €221 million and Marie Skłodowska-Curie by €100 million. The Initiative for Sciences in Europe, of which the EMS is a part, launched a protest campaign, www.no-cuts-on-research.eu/emailcampaign/

HORIZON 2020: RISE call opened

The *Research and Innovation Staff Exchange* (RISE) is a scheme under the Marie Skłodowska-Curie actions involving organisations from the academic and non-academic sectors (in particular SMEs), based both within and outside Europe. Support is provided for the development of partnerships in the form of joint research and innovation activities. The call for proposals has an available budget of €80 million and is **open until 28 April 2015**. Go to www.euro-math-soc.eu/news-section/calls for more details.

Meeting of Presidents 2015

Since 2008, the presidents of the full member societies of the European Mathematical Society have met once per year to discuss topics of common interest and to foster increased interaction. This year's meeting will take place at the University of Innsbruck at the invitation of the Austrian Mathematical Society. Go to http://tinyurl.com/m5le23j for more details.

David Chillingworth
LMS/EMS Correspondent

RAMANUJAN PRIZE 2015

Call for Nominations

The Ramanujan Prize for young mathematicians from developing countries has been awarded annually since 2005. It is now funded by the DST (India) and administered by ICTP, the IMU and the DST. The deadline for nominations for the 2015 prize is **15 April 2015**.

Nominations should be sent to math@ictp.it. Further information can be found http://tinyurl.com/nlglhwk.

KYOTO PRIZE 2014

The 2014 Kyoto Prize for Basic Sciences was awarded to Professor Edward Witten (Institute for Advanced Study, USA) for his 'Outstanding Contributions to the Development of Mathematical Sciences through the Exploration of Superstring Theory'.

The Kyoto Prize Presentation Ceremony was held at the Kyoto International Conference Center in Kyoto, Japan on 10 November 2014. Further information can be found at www.inamori-f.or.jp.

EWM-EMS SUMMER SCHOOL 2016
Call for proposals

The European Women in Mathematics (EWM) and the European Mathematical Society (EMS) Women in Mathematics Committee are pleased to invite proposals for a one week summer school at the Institut Mittag Leffler in Stockholm for the summer of 2016.

Deadline for applications is **1 April 2015**. Guidelines and further details can be found at http://tinyurl.com/nqvsdtw. Contact Ulrike Tillmann (tillmann@maths.ox.ac.uk) with any questions.

MATHEMATICS POLICY ROUND-UP
February 2015

RESEARCH

Research Excellence Framework (REF) reports
A number of REF reports have been published giving additional information about the REF process and management. More information is available at http://tinyurl.com/l3pkmrw.

Submissions to the Research Excellence Framework (REF)
The 1,911 submissions made by 154 UK universities to the 2014 REF have been published. The submissions included 52,061 academic staff, 191,150 research outputs (such as journal articles, authored books and book chapters); and 6,975 case studies of the impact of research. More information is available at http://tinyurl.com/pl42rat.

HIGHER EDUCATION
Government outlines higher education funding priorities for 2015-16

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 Funding Council for England (HEFCE) for financial year 2015-16. More information is available at http://tinyurl.com/pec8ul8.

SCHOOLS AND COLLEGES
GCSE mathematics reforms and the Ofqual research programme

Ofqual has accredited a number of new GCSE mathematics specifications from all the exam boards. These will be awarded for the first time in summer 2017. Teaching for two year courses will begin in September 2015. The Associate Director of Research and Analysis at Ofqual has spoken recently about the new mathematics specifications. A transcript and video of the presentation are available at http://tinyurl.com/n64kqdq

OTHER

Alan Turing Institute partners announced
The five universities selected to lead the Alan Turing Institute have been announced by Dr Vince Cable, Secretary of State for Business, Innovation and Skills. They are the universities of Cambridge, Edinburgh, Oxford, Warwick and University College London.

The Institute will build on the UK's existing academic strengths and help position the country as a world leader in the analysis and application of big data and algorithm research. Its headquarters will be based at the British Library at the centre of London's Knowledge Quarter. More information is available at http://tinyurl.com/nwtykcy

Chair of the Alan Turing Institute
The Board of the Alan Turing Institute is seeking to appoint a Chair. The Alan Turing Institute places the UK at the forefront of world-wide research in data science and its exploitation. It generates new algorithms and techniques, and works with academia, industry, the public and third sectors to realise their value. More information is available at http://tinyurl.com/ptbw3rn.

Dr John Johnston
Joint Promotion of Mathematics

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Chair of the Heilbronn Institute for Mathematic

Vacancy Number: ACAD101248

The Heilbronn Institute for Mathematical Research (HIMR) is seeking to appoint an outstanding academic leader to sustain and develop a major national institute of excellent international standing around the talented group of mathematicians that HIMR has brought to Bristol and London both to support and nurture their research and to make a significant contribution to strengthening the UK mathematics community.

This leadership role is a part-time one occupying 50% of a working week.

There is considerable flexibility in the arrangements for taking up the post. For example; as the leadership role is a part-time one, there is the option for suitably qualified candidates to combine the post with an existing professorial research appointment. It is also possible for the job to be taken up on secondment from an existing home institution.

If this post is combined with a professorial research-post then a generous personal research allowance will be provided to cover travel, conference attendance etc. in support of the post-holder's research activities.

This position will rotate approximately every three years. A flexible and competitive salary package is available.

Qualities required:

1. Excellent leadership abilities (e.g. ability to chair and drive a recruitment network of senior mathematicians and make things happen).

2. Strong reputation as a mathematical scientist with high credibility in UK mathematics. Well connected within UK academia.

3. Charismatic, approachable and persuasive with good people skills.

4. Determination to make improvements; innovative and receptive to new ideas.

5. Ability and willingness to convey to the external community a strong enthusiasm and vision for HIMR's contribution to UK mathematics.

6. Broad mathematical sympathies. A strong commitment to mentoring and nurturing young mathematicians.

www.bristol.ac.uk

cal Research

The Chair's office will be located at the University of Bristol, and he/she will report to the Dean of Science.

A part of the selection process will involve gathering views about candidates from across the mathematical community.

Due to the nature of the Heilbronn Institute's work, you must satisfy vetting before appointment. UK resident, UK nationals will normally be able to meet this condition: other potential applicants should consult the Heilbronn administrator (see below) about their eligibility before applying.

To discuss any aspect of the post, please initially get in touch with Mr Nick Hodges, Heilbronn administrator, telephone (+44) (0)117 980 6300, email: nick.hodges@himr.gsi.gov.uk, who can then also advise on other appropriate contacts.

The University of Bristol is a founder member of the Royal Society Athena SWAN (Scientific Women's Academic Network) Charter which recognises excellence in STEMM employment in higher education, with particular regard to gender equality.
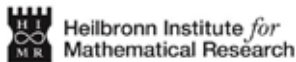
The University of Bristol is proud to have been one of the first Universities to be successful in being awarded the Athena SWAN Bronze Award. A number of Athena SWAN Awards have also been achieved by the University's Schools in recognition of their success in providing positive support for women in STEMM during their careers.

To apply please visit our website at www.bris.ac.uk/jobs enter the vacancy number into the job search and follow the link to the online application process.

The closing date for applications is 20 March 2015.

The University of Bristol is committed to equality and we value the diversity of our staff and students.

Heilbronn Institute *for* Mathematical Research

University of BRISTOL

Heilbronn Institute *for* Mathematical Research

CMI

LONDON MATHEMATICAL SOCIETY 150 YEARS

DIOPHANTINE EQUATIONS

LMS-CMI Research School

Baskerville Hall, Hay-on-Wye
15-19 September 2015

Organisers: Tim Dokchitser (Bristol), Vladimir Dokchitser (Warwick)

The course will give an overview of the existing methods for investigating integer and rational solutions to Diophantine equations. It will include both the algebraic, analytic and model theory aspects of the subject. The course will take the format of three 6-hour mini-courses, supported by exercise classes. The three mini-courses are:

1. Rational Points.
A. Rational points on curves. **Michael Stoll (Bremen)**
B. Higher-dimensional varieties. **Alexei Skorobogatov (Imperial)**

2. Integral Points.
A. Basic methods and solubility. **Jennifer Park (McGill)**
B. Analytic methods. **Trevor Wooley (Bristol)**

3. Elliptic and Modular Curves.
A. Elliptic curves. **Tim and Vladimir Dokchitser**
B. Modularity. **Andrew Granville (Montreal/UCL)**

For further information please visit: www.maths.bris.ac.uk/~matyd/DE/

Applications
Applications should be made using the registration form available via the Society's website at: www.surveymonkey.com/s/RYXPBY5 and applicants should have a letter of support sent to the organisers at DiophantusBaskerville@gmail.com. Research students, post-docs and those working in industry are invited to apply.

The closing date for applications is **15 June 2015.** 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.

All other participants (e.g. those working in industry) will be charged a registration fee of £250 plus the full subsistence costs (£250), **£500** in total.

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 15 August 2015.

LONDON
MATHEMATICAL
SOCIETY
150 YEARS

LMS 150TH ANNIVERSARY
POSTDOCTORAL MOBILITY GRANTS
2015-16 Awards

The London Mathematical Society will award grants of up to £9,200 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 2015-16 at one or more institutions other than the holder's home institution (the holder's home institution may be included for applicants with circumstances that make moving impractical, please visit the website for the full guidelines). 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 applicants should request that referees email 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.

These grants have been established by the LMS to mark its 150th anniversary.

Applications should be sent by **Tuesday 31 March 2015** by email to: pmg@lms.ac.uk.

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 2015.
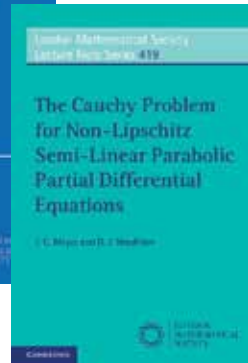
LONDON
MATHEMATICAL
SOCIETY
150 YEARS

UNIVERSITY OF
CAMBRIDGE

BMC-BAMC 2015: 30 March – 2 April 2015
including
LMS 150TH ANNIVERSARY CELEBRATION
on
Wednesday 1 April 2015

9.00 am	Morning Speakers: **Ulrike Tillmann** (Oxford), **Ye Tian** (CAS Beijing)
10.00 am	Morning Speakers: **Arend Bayer** (Edinburgh), **Adrian Constantin** (KCL)
11.30 am	Plenary: **Robert Calderbank** (Duke)
12.30 pm	Lunch
2.00 pm	Afternoon Workshops (including LMS Scheme 3 meetings)
4.40 pm	LMS Society Meeting
5.00 pm	Plenary: **Sir Andrew Wiles** (Oxford)
7.00 pm	Drinks Reception at Churchill College
8.00 pm	Conference Dinner at Churchill College (separate ticket required) The after dinner speaker will be **Philip Nelson** (Head of EPSRC)

This 150th celebration day is part of the BMC-BAMC 2015 conference. The full conference will also include plenaries given by Ingrid Daubechies (Duke), Jacques Dumais (UAI, Chile), Phil Hall (Imperial), Peter Kronheimer (Harvard), Sylvia Serfaty (Paris 6 & Courant), and Wendelin Werner (Paris-Sud & ENS), as well as 8 further morning speakers and a public lecture given jointly by Stephen Hawking (Cambridge) and Michael Green (Cambridge).

For further details and to register, please visit www.bmcbamc.org. uk. Early bird registration opens on 1 December 2014 and closes on 7 February 2015. The cost of registration will be approximately £115, with the dinner approximately an additional £50 including drinks. Accommodation in Cambridge Colleges is also available, but the number of rooms is limited and expected to sell out quickly.

VARIATIONAL METHODS FOR STATIONARY AND EVOLUTIONARY PROBLEMS

A short afternoon meeting on *Variational Methods for Stationary and Evolutionary Problems* will take place at the Mathematics Institute of the University of Warwick on Tuesday 12 May 2015. The purpose of this short meeting is to bring together people working in the theory of stationary and evolutionary problems with a variational structure, and to foster the exchange of ideas between the two. The confirmed speakers are:

• Alexander Mielke (WIAS & HU Berlin)
• Jan Kristensen (Oxford)
• Filip Rindler (Warwick)

There is no registration fee, but attendance should be registered at the meeting website: tinyurl.com/varmeth15. This meeting is supported by an LMS Conference grant celebrating new appointments, the EPSRC and the Mathematics Institute of the University of Warwick.

ELLIPTIC CURVES, MODULAR FORMS AND IWASAWA THEORY

A conference on *Elliptic Curves, Modular Forms and Iwasawa Theory*, in honour of the 70th birthday of John Coates will take place at the University of Cambridge from 25 to 27 March 2015. It aims both to explain the state of our knowledge and to reflect on the modern approaches to the arithmetic of elliptic curves, modular forms and Iwasawa theory. It follows a Royal Society Kavli Centre workshop from 23 to 24 March on the same topic, but while the workshop is limited to 20 participants due to the Royal Society restrictions and is fully booked, the conference is open for everyone to attend. Graduate students and young researchers are particularly welcome to participate, and financial support is offered to UK graduate students.

There is a £30 registration fee, waived for graduate students. The speakers are:

• Thanasis Bouganis (Durham)
• Ralph Greenberg (Irvine)
• Haruzo Hida (UCLA)
• Mahesh Kakde (King's College London)
• Minhyong Kim (Oxford)
• Masato Kurihara (Keio)
• Barry Mazur (Harvard)
• Peter Schneider (Munster)
• Romyar Sharifi (Arizona)
• Ye Tian (Beijing)
• Jacques Tilouine (Paris)
• Sir Andrew Wiles (Oxford)
• Christian Wuthrich (Nottingham)

For more information visit the conference website www.maths.bris.ac.uk/~matyd/JHC70/ or contact the organizers Tim Dokchitser, Vladimir Dokchitser, David Loeffler, Sarah Zerbes by email (coates70th@gmail.com).

The conference is supported by an LMS Conference grant, The Royal Society, Glasgow Mathematical Journal, DPMMS and Emmanuel College, Cambridge.

INTEGRABILITY AND ALL THAT

The meeting *Integrability and All That* on algebraic, geometric and analytic aspects of integrability will be held at Loughborough University from 8 to 9 May 2015 to celebrate the 60th birthday of Professor Sasha Veselov who made fundamental contribution to the field. For educational purposes the conference will be open for British PhD students working in this area to offer them a panoramic view on the modern theory of integrable systems. Invited speakers include:

• Oleg Chalykh (University of Leeds)
• Alexander Bobenko (Technische Universität Berlin)
• Giovanni Felder (ETH, Zurich)
• Tamara Grava (University of Bristol)
• Mark Gross (University of Cambridge)
• Andrew Hone (University of Kent)
• Alastair King (University of Bath)

For further information see the conference web page at http://homepages.lboro.

ac.uk/~mavn/Integrability_and_All_That/ main.htm or contact one of the following conference organisers: Alexey Bolsinov (A.Bolsinov@lboro.ac.uk), Vladimir Novikov (V.Novikov@lboro.ac.uk) and Jenya Ferapontov (E.V.Ferapontov@lboro.ac.uk).

The conference is supported by an LMS Conference grant. Funds are available to UK research students (housing and travel).

WALES MATHEMATICS COLLOQUIUM 2015

The Wales Mathematics Colloquium is a forum for the promotion and discussion of current research in Mathematics in Wales. The principal themes of the colloquium in 2015 are stochastic processes, stochastic analysis and applications, but there will be other talks covering a wide range of topics in Pure and Applied Mathematics. The meeting will be held at Gregynog Hall, Tregynon, near Newtown, Powys, beginning with tea at 4 pm on 18 May and finishing after lunch on 20 May 2015. Invited speakers are:

• David Applebaum, University of Sheffield (interests include probability theory, stochastic processes, stochastic analysis, pseudo-differential operators)
• Yuri Kondratiev, Bielefeld University (interests include infinite dimensional analysis, stochastic analysis, interacting particle systems, mathematical biology)
• Xue-Mei Li, University of Warwick (interests include stochastic differential equations and dynamical systems, stochastic analysis on geometric spaces and in infinite dimensions)

The meeting is organised by Mathematics departments of the Universities in Wales in conjunction with the Wales Institute of Mathematical and Computational Sciences, and most participants will be staff or research students from those universities. Any others who would like to attend will be very welcome. The registration fee is about £210, to include all meals and accommodation. Please note that the organis-

ers are unable to give financial support to outside participants. Owing to limited accommodation, places will be allocated on a first come, first served basis. If you are interested, contact S. Williamson (administrator@wimcs.ac.uk) or visit the website www.wimcs.ac.uk/gregynog.html for an application form. The meeting is supported by an LMS Conference grant.

MODERN MATHEMATICAL METHODS IN SCIENCE AND TECHNOLOGY

The conference *Modern Mathematical Methods in Science and Technology* will be held at the City of Kalamata, Greece, from 30 August to 1 September 2015. It is the fourth in a series of conferences organized in various locations in Greece. The main conference themes are:
• Differential Equations and Mathematical Models
• Numerical Analysis
• Applications of Mathematics in Finance
• Stochastic Analysis, Modelling
• Optimization, Control Theory
• Image and Signal Processing
• Mathematics of Computation

The conference will include plenary talks by the following invited speakers:
• H. Ammari (ENS, Paris)
• M. Dafermos (Cambridge)
• F. Gazzola (Milano)
• F. Santambrogio (Paris Sud)
• P. Souganidis (Chicago)
• C. Tsogкa (Crete)

A limited number of selected, peer-reviewed papers from the conference will be published in a Special Issue of the journal *Mathematical Methods in the Applied Sciences*.

The conference is organized by the Department of Mathematics of the National and Kapodistrian University of Athens. For further information visit http://noether.math.uoa.gr/conferences/m3st2015/ or contact gbarbatis@math.uoa.gr.

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THE LONDON MATHEMATICAL SOCIETY
JOINTLY WITH GRESHAM COLLEGE

<u>Wednesday, 20 May 2015</u>

6:00pm at The Museum of London

Geometry: A New Weapon in the Fight Against Viruses

Professor Reidun Twarock

University of York

Viruses like the common cold look like tiny footballs and mathematics can therefore help to understand how they form and evolve. Our highly interdisciplinary approach in understanding and combating viruses, in which mathematics plays a key role, provides surprising new avenues in our fight against viral disease.

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

BATH ANALYSIS DAY

LMS WIMCS-Bath Analysis Day will take place at the Department of Mathematics, Swansea University, on Friday 20 March 2015 from 10:00 - 18:00. This is the first event in the series of four workshops scheduled during the year in Swansea, Aberystwyth, Cardiff and Bath in the framework of the LMS Joint Research Groups in the UK (Scheme 3) project.

The meeting, which is open to all, will provide an opportunity to established as well as junior researchers in the areas of analysis and partial differential equations to present their recent results. The speakers include:
• Federica Dragoni (Cardiff)
• Matthew Lettington (Cardiff)
• Valery Smyshlyaev (UCL, London)

For further information visit the meeting web page at http://math.swansea.ac.uk/staff/vm/LMS-WIMCS-Bath-2015/ or contact Dr Vitaly Moroz (v.moroz@swansea.ac.uk). The meeting is supported by the LMS Joint Research Groups in the UK (Scheme 3) grant and Research Fund of College of Science, Swansea University.

LMS-CMI RESEARCH SCHOOLS
Call for proposals

The London Mathematical Society and Clay Mathematics Institute invite proposals for Research Schools in 2016.

Up to £31,000 is available per Research School which provides training for young researchers in a core area of mathematics. The new series of courses builds on the short courses, previously supported by the Society and EPSRC, and aims at the highest international standing by allowing for support of both international lecturers and participants.

The LMS and the CMI intend to support four Research Schools in 2016.

Prospective organisers should send an outline proposal to Elizabeth Fisher (Research.Schools@lms.ac.uk) by **Wednesday 8 April 2015**.

Outline proposals should discuss:

• The general mathematical area of the proposed Course and its importance.
• The aims of the Course, its appropriateness to the Instructional Course programme and the likely level of demand for the Course.
• The names and affiliations of the lecturers, titles of their courses and brief syllabuses.
• The provision for tutorial support.

Outline proposals should be no more than two A4 sides in length.

For further details about the Research Schools, please visit the Society's website:

www.lms.ac.uk/events/lms-cmi-research-schools.

Before submitting: Organisers are welcome to discuss informally their ideas with the Chair of the Research Meetings Committee (RMC.Chair@lms.ac.uk).

OPTIMIZATION AND BIG DATA

The third *Optimization and Big Data* workshop is held in Edinburgh from 6 to 8 May 2015. With the ever-increasing volumes of available data arising in multiple domains comes the need to solve optimization problems of unprecedented sizes. The aim of this workshop is to bring together researchers working on the theory and practice of big data optimization. It provides a forum for interaction between international and UK experts. Confirmed speakers include:

• Coralia Cartis (Oxford)
• Garud Iyengar (Columbia)
• Rodolphe Jenatton (Amazon Berlin)
• Francois Glineur (Louvain)
• Donald Goldfarb (Columbia)
• Arkadi Nemirovski (Georgia Tech)
  – keynote
• Zheng Qu (Edinburgh)
• Katya Scheinberg (Lehigh)

For more information visit the website tinyurl.com/py5mskh or contact by email the organizers: Zheng Qu (zheng.qu@ed.ac.uk) and Peter Richtárik (peter.richtarik@ed.ac.uk).

The meeting is supported by an LMS Conference grant, EPSRC and the University of Edinburgh.

GROUPS IN GALWAY 2015

Groups in Galway has been running on an annual basis since 1978. A two-day meeting on group theory and related topics will be held at National University of Ireland, Galway, from Friday 22 to Saturday 23 May 2015. The speakers include:

• Nicolas Bergeron (Université de Paris 7)
• Serge Bouc (Université de Picardie)
• Hans Cuypers (TU/Eindhoven)
• Tom de Medts (Ghent University)
• Peter Kropholler (University of Southampton)

• Radu Stancu (Université de Picardie)
• Alain Valette (Université de Neuchâtel)

There will be a poster session for students, PhD students, post-doctoral research fellows and other young researchers, and research expenses prizes will be awarded to the top ranked posters. If you are not based in Galway, you can send a pdf file of your poster to Alexander Rahm (alexander.rahm@nuigalway.ie) and he will print your poster locally (free of charge for the participant), in order to avoid transport damage.

There is no conference fee. Further information can be found at the conference homepage www.maths.nuigalway.ie/conferences/gig15/. Contact the organizers Alexander Rahm (alexander.rahm@nuigalway.ie) or Sejong Park (sejong.park@nuigalway.ie) if you have more questions.

COMBINATORIAL MATHEMATICS AND COMBINATORIAL COMPUTING

The 39th Australasian Conference on *Combinatorial Mathematics and Combinatorial Computing* (39ACCMCC) will be held at the University of Queensland, in Brisbane, Australia, from Monday 7 December to Friday 11 December 2015. The annual ACCMCC meetings aim to bring together experts in all areas of discrete and combinatorial mathematics and related areas of computer science from Australasia and around the world. The five-day conference includes around eight plenary talks, many contributed talks, a welcome reception, a conference excursion and a conference dinner. Plenary speakers confirmed so far are:

• Saad El-Zanati (Illinois State University)
• Catherine Greenhill (University of New South Wales)
• Penny Haxell (University of Waterloo)
• Jonathan Jedwab (Simon Fraser University)
• Charles Semple (University of Canterbury)

More information can be found on the conference website at http://39accmcc.smp.

uq.edu.au/. At this stage, the website contains only basic information, but further information will be added as it becomes available. Please send any questions to Darryn Bryant at db@maths.uq.edu.au.

MODELLING BIOLOGICAL EVOLUTION

A workshop on *Mathematical and Computational Models in Evolutionary Biology* will take place in the Department of Mathematics in University of Leicester from 28 April to 1 May 2015. The workshop will focus on various aspects of modelling evolution in different biological systems ranging from macromolecules and cells to processes in sociobiology, including the evolution of human culture and behaviour. Various methods and modelling techniques will be represented including general aspects of game theory, adaptive dynamics, optimization, reinforcement learning, model reduction, individual based models as well as their combinations. An important part of the conference will be comparison of the results obtained based on different mathematical techniques to stimulate further advances in modelling biological evolution. The meeting is also expected to be an open forum for communication between empirical biologists and mathematicians with the main goal of enhancing interdisciplinary approaches and stimulating further advances in understanding biological evolution.

The list of keynote speakers includes:
• Samuel Alizon (Montpellier)
• Nick Britton (Bath)
• Sergey Gavrilets (Tennessee)
• Alexander Gorban (Leicester)
• Ivana Gudelj (Exeter)
• Rebecca Hoyle (Southampton)
• Yoh Iwasa (Kyushu University)
• John McNamara (Bristol)
• Katerina Stankova (Maastricht University)
• Arne Traulsen (Max-Planck-Institute)

Email am379@leicester.ac.uk to register your interest. For further information visit the website at www.math.le.ac.uk/people/ag153/homepage/MBE15/MBE15.htm.

There will be a limited support for young researchers (UK based research students). The main organizer is Dr Andrew Morozov. The meeting is supported by an LMS Conference grant and by the University of Leicester.

QUANTUM GROUPS AND QUANTUM INFORMATION THEORY

A workshop on *Quantum Groups and Quantum Information Theory* will be held at Herstmonceux Castle, Sussex from Monday 13 to Friday 17 July 2015. The workshop aims at bringing together experts in the fields of (free) quantum groups and quantum information theory from Europe and North America. Both fields have common problems and areas of interest, such as random matrix theory. They also share important technical tools, despite developing independently.

Thus far there has not been a joint meeting involving the fields of free quantum groups, quantum information theory and random matrix theory. This workshop will fill this gap by bringing together researchers from these areas so that they can learn from each other's techniques, approaches and open problems. The topics discussed during the workshop will range from the Weingarten calculus and planar combinatorial calculations to quantum de Finetti theorems and free probability.

For more information visit the website: www.fields.utoronto.ca/programs/scientific/15-16/QGQIT/ or contact the organisers, Benoit Collins (bcollins@uottawa.ca), James Mingo (mingo@mast.queensu.ca), Ashley Montanaro (ashley@cs.bris.ac.uk), Maria Grazia Viola (mviola@lakeheadu.ca) and Moritz Weber (weber@matha.uni-sb.de).

The workshop is supported by an LMS Research Workshop Grant, the Fields Institute for Research in Mathematical Sciences, the ERC through the Advanced Grant of Roland Speicher and the Starting Grant of Matthias Christandl, and Lakehead University.

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HOPF-GALOIS THEORY AND GALOIS MODULE STRUCTURE

A workshop on *Hopf-Galois Theory and Galois Module Structure* will take place from Tuesday 23 to Friday 26 June 2015 at the University of Exeter. The purpose of the workshop is to bring together researchers from the UK, Europe and the US interested in arithmetic aspects of Hopf-Galois theory and in other areas of ramification theory and Galois module structure. In particular, it will explore connections between arithmetic, algebraic and geometric approaches to questions of ramification in Galois and Hopf-Galois extensions of local fields in characteristic p and characteristic 0. Confirmed participants include:

- Victor Abrashkin (Durham)
- Lindsay Childs (Albany)
- Ilaria del Corso (Pisa)
- Cornelius Greither (Munich)
- Alan Koch (Atlanta)
- Bernhard Koeck (Southampton)
- Bouchaib Sodaigui (Valenciennes)
- Dajano Tossici (Bordeaux)
- Robert Underwood (Montgomery)

Young researchers (in particular, UK-based research students) are encouraged to attend. For further information, visit the website http://empslocal.ex.ac.uk/people/staff/hj241/hopf-galois.html or contact the organisers, Nigel Byott (N.P.Byott@exeter.ac.uk), Griff Elder (elder@unomaha.edu), Henri Johnston (H.Johnston@exeter.ac.uk). The workshop is supported by an LMS Research Workshop grant.

AN AFTERNOON IN LOW-DIMENSIONS

An Afternoon in Low-Dimensions will take place on Friday 20 March 2015 in Mathematics 204 at the University of Glasgow. The aim of this workshop is to study some aspects of low-dimensional topology, through the lens of invariants like Khovanov homology and Heegaard Floer theory. As there will be emphasis on context and background, postgraduates are strongly encouraged to participate.

The speakers are:
- Jonathan Hanselman (University of Texas at Austin)
- Jake Rasmussen (University of Cambridge)
- Liam Watson (University of Glasgow)

Travel support for UK postgraduates may be available. For further information and further details about the meeting visit the website at tinyurl.com/k4l2s29 or contact Liam Watson (Liam.Watson@glasgow.ac.uk).

The meeting is supported by an LMS Conference grant celebrating new appointments, the European Commission and the School of Mathematics and Statistics, University of Glasgow.

BREAKING BOUNDARIES

A meeting on Breaking Boundaries between Analysis, Geometry and Topology will take place from 15 to 16 April 2015 at Department of Mathematics, University of Sussex. Analysis, Geometry and Topology have a long and successful history of research in Sussex. The aim of this meeting is to bring together some of the established and leading researchers in the fields to exchange ideas and foster collaboration by bridging between the fields and breaking boundaries. The Invited Speakers include:

- David Applebaum (Sheffield)
- Michiel van den Berg (Bristol)
- Peter Cameron (St Andrews)
- David Edmunds (Sussex)
- Niels Jacob (Swansea)
- Dale Rolfson (UBC, Vancouver)

For further information visit the website at tinyurl.com/mhbwyw3 or contact Dr Ali Taheri (Ali Taheri (A.Taheri@sussex.ac.uk). Dale Rolfson's visit is supported by an LMS Scheme 2 grant (see page 33).

VISIT OF DALE ROLFSEN

Professor Dale Rolfsen (University of British Columbia, Vancouver, Canada) will be visiting the UK from 13 April to 10 May 2015. His research has centered on three-manifold topology, and has included work in knot theory and mapping class groups. He is the author of the key reference *Knots and Links* – a book that remains an important point-of-entry to the field today – and he has played a central role in developing ties between orderable groups and topology. Professor Rolfsen will give the following talks at:

- University of Sussex (local contact: Roger Fenn)
  Generalized Torsion in Knot Groups, part of the workshop 'Breaking Boundaries'
  15-16 April (see page 32)
- University of Glasgow
  (local contact: Liam Watson),
  Generalized Torsion in Knot Groups, Geometry and Topology Seminar,
  20 April
  Moving Cubes Around,
  School Colloquium,
  22 April
- Imperial College London
  (local contact: Dorothy Buck)
  Knots, Groups and Ordering Geometry and Topology Seminar, 8 May
  For further details contact Liam Watson (liam.watson@glasgow.ac.uk). The visit is supported by an LMS Scheme 2 grant.

VISIT OF PIERRE WILL

Dr Pierre Will (Fourier Institute, Grenoble) will be visiting the UK between 1 and 14 March 2015. Dr Will works on discrete subgroups of complex hyperbolic isometries. Details of Dr Will's talks during his visit are:

- Monday 2 March, Durham University,
  Algebraic and geometric invariants in complex hyperbolic plane
  (contact John Parker: j.r.parker@durham.ac.uk)
- Friday 6 March, University of York,
  Discrete groups in complex hyperbolic geometry
  (contact Brent Everitt: brent.everitt@york.ac.uk)
- Friday 13 March, University of Liverpool, *On 2-generator subgroups of PU(2,1)*
  (contact Anna Pratoussevitch: anna.pratoussevitch@liverpool.ac.uk)
  Further details of these arrangements may be obtained from John Parker (j.r.parker@durham.ac.uk). The visit is supported by an LMS Scheme 2 grant.

VISIT OF ARKADY VAINTROB

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Professor Arkady Vaintrob (University of Oregon) will be visiting the UK from mid-March to mid-June 2015, mostly based at the University of Edinburgh. He works on the interface between several subjects: mathematical physics, algebraic geometry, mirror symmetry, and quantum topology. During his visit Professor Vaintrob will lecture at:

- Queen Mary, University of London, Geometry seminar, Tuesday 17 March at 3 pm
  (contact Shahn Majid: s.majid@qmul.ac.uk)
- University of Sheffield, Differential Geometry seminar, Monday 13 April at 3 pm
  (contact Kirill Mackenzie: k.mackenzie@sheffield.ac.uk)
- University of Manchester, Geometry seminar, Thursday 16 April at 4:15 pm
  (contact Ted Voronov: voronov@manchester.ac.uk)
  For further details contact José Figueroa-O'Farrill (j.m.figueroa@ed.ac.uk). The visit is supported in part by an LMS Scheme 2 grant.

GEOMETRY OF RANDOM WALKS AND SLE

Isaac Newton Institute for Mathematical Sciences

Birthday Conference for Greg Lawler

15 – 19 June 2015

in association with the Isaac Newton Institute programme
Random Geometry
(12 January - 3 July 2015)

Organisers: Tom Alberts (Utah), Itai Benjamini (Weizmann Institute of Science), Nathanael Berestycki (University of Cambridge), Michael Kozdron (Regina), Jean Francois Le Gall (Université Paris-Sud 11), Scott Sheffield (Massachusetts Institute of Technology)

Workshop Theme: This workshop is being held to celebrate the mathematics of Gregory Lawler on the occasion of his 60th birthday. The focus will be on recent developments in the areas to which Professor Lawler has contributed, including loop-erased random walk, random walk in random environment, intersections of random walks, loop measures, and the Schramm-Loewner evolution (SLE).

Further information and application forms are available from the website
www.newton.ac.uk/programmes/RGM/rgmw05

Closing date of the receipt of applications is **19 May 2015**.

EUROPEAN SET THEORY CONFERENCE

Isaac Newton Institute for Mathematical Sciences

24 – 28 August 2015

in association with the Isaac Newton Institute programme
Mathematical, Foundational and Computational Aspects of the Higher Infinite
(19 August – 18 December 2015)

The 5th European Set Theory Conference (5ESTC) is the fifth meeting in a series of biannual meetings coordinated by the European Set Theory Society. Earlier meetings were held in Bedlewo (1ESTC, July 2007 and 2ESTC, July 2009), Edinburgh (3ESTC, July 2011) and Mon St. Benet (4ESTC, July 2013).

As part of 5ESTC, we are celebrating the 70th birthday of Adrian Mathias during the Mathias Day (Thursday). The programme consists of a tutorial, the Mathias Day, plenary lectures, invited (parallel lectures) and contributed talks.

Programme Committee consists of Joan Bagaria (Chair: ICREA and Barcelona), Mirna Džamonja (East Anglia), Benedikt Löwe (Amsterdam and Hamburg), Ralf Schindler (Münster) and Philip Welch (Bristol).

Further information and application forms are available from the website
www.newton.ac.uk/event/hifw01

Closing date of the receipt of applications **19 April 2015**.

OBITUARY

ANTHONY JOHN KNIGHT

Dr Anthony John Knight, who was elected a member of the London Mathematical Society on 20 November 1952, died on 19 December 2014, aged 85.

Charles Goldie writes: Tony Knight gained first-class honours, followed by an MSc with distinction, from University College London in 1950 and 1951, then researched at Cambridge on algebraic geometry under J.A. Todd FRS, being awarded his PhD in 1954. After two years as a Scientific Officer with the Ministry of Supply he was appointed to lecture at University College, Leicester, later the University of Leicester, where he stayed until 1963, moving to the University of Sussex at the start of the second year of its Mathematics Department. He retired by stages in 1982 and 1985, and in 2000 was made an Emeritus Lecturer, a title unique to Sussex (but now abolished).

He published 12 papers and a correction note, all but the last two papers appearing in the Society's journals, and all under sole authorship. His research for the PhD started with a problem of D.B. Scott, which Knight solved to the surprise of his supervisor by moving into abelian varieties. The main body of his work was then a sequence of substantial papers on abelian varieties. In his last papers he branched out into other areas. However, he was a perfectionist and, by his own characterisation, not in a hurry. His fellow members of the then London-Sussex Geometry Seminar knew that he had other results which he did not regard as complete enough to publish.

Tony married in retirement but his wife predeceased him in 2003; he is survived by his stepchildren.

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REVIEWS

ARNOLD: SWIMMING AGAINST THE TIDE edited by Boris A. Khesin and Serge L. Tabachnikov, American Mathematical Society, 2014, pp 224, £23.95, ISBN 978-1-4704-1699-7 pbk.

'When a problem resists a solution, I jump on my cross-country skis. Forty kilometres later a solution (or at least an idea for a solution) always comes. Under scrutiny, an error is often found. But this is a new difficulty that is overcome in the same way.'
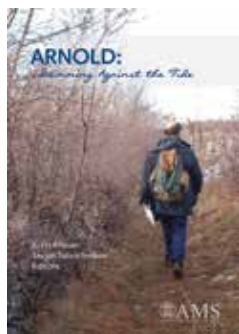
Vladimir (Dima) Arnold was an astonishing figure, as a mathematician and as human being. He believed vigorous occupation with mathematics should be accompanied by vigorous physical exercise, and he led his students and colleagues in a demanding style in both. His Tuesday afternoon Moscow seminars were legendary, and his mathematical achievements were of extraordinary depth, breadth and influence.

Starting from his solution as an undergraduate to a version of Hilbert's superposition problem (is it possible to represent any continuous function of three variables as a superposition of continuous functions of two variables?) he progressed to groundbreaking achievements in small denominators (KAM theory), symplectic geometry and topology, singularity theory, bifurcation theory, dynamical systems and hydrodynamics for example. He showed that solutions of the Euler equation for incompressible fluid flow in a domain M represent geodesic flow on the infinite-dimensional manifold D(M) of

volume-preserving diffeomorphisms of M (a far-reaching paradigm since applied in other areas) and, as if that were not mind-stretching enough, went on to compute curvatures on D(M) from which he was able to estimate that two months' accurate weather prediction requires initial data ten thousand times more accurate than the prediction. You'd think it fantasy mathematics. He had no time for Bourbakism, and liked to describe mathematics as an inexpensive branch of physics. His work was visionary yet detailed when necessary, powered by geometric thinking yet grounded in analysis, and always inspirational.

The first part of this volume is a collection of articles by Arnold about his work and his thoughts on mathematics and its culture, including an appreciation of the life of the topologist Vladimir Rokhlin, a man of uncompromising integrity about whom Arnold writes: '*I always felt as if I were communicating with a supreme mind, aware of the most final and true answers to all questions*'. There is also an instructive article by Jürgen Moser on the early history of KAM theory and how his own contributions related to those of Kolmogorov and Arnold.   The second part of the book, following after a fine collection of photographs of young Dima as well as many more recent examples, consists of

lively recollections by others, several of them students of Arnold giving many insights into Arnold's unusual ways of working and living, but some from farther afield such as Michael Berry, Helmut Hofer and Steve Smale. Berry highlights Arnold's often abrasive campaign to bring to Western recognition the prior publications of Russian mathematicians, Hofer describes Arnold's work in symplectic geometry as well as his failed attempt to swim across San Francisco Bay, while Smale comments on Arnold's influence on his own work. '*Dima could express important ideas simply*', he writes, '*and in such a way that these ideas could transcend a single discipline*'.

The articles in this highly readable collection have appeared before, many of them in the AMS *Notices* or conference volumes. An exception is Arnold's *Mathematical Trivium* published in *Russian Math. Surveys* (LMS). According to Arnold, '*the standard of mathematical culture is falling*', one cause being the exam system that produces '*pseudo-scientists who … cram themselves with formulae and rote-learning*', and so the only way to see what students have actually learned is to give a list of problems that they should be able to solve. Readers might like to try their hand at his list!

David Chillingworth
Southampton University

COUNT LIKE AN EGYPTIAN by David Reimer, 2014, Princeton University Press, 256 pp, £19.95, US$29.95, ISBN 978-0-6911-6012-2.
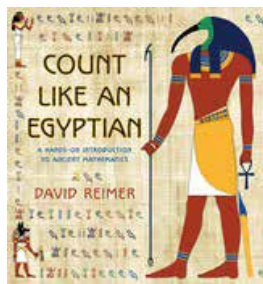
What would it be like to do math differently? *Can* it be done differently? Why would one want to? These are the questions underlying David Reimer's *Count Like an Egyptian*. Through 200 colourful and lively pages, Reimer advocates passionately for ancient Egyptian mathematics, particu-

larly its approaches to multiplication and division and their applications to aspects of Egyptian life such as division of resources, building pyramids, even drawing portraits. Appropriate to middle school teachers and above, the book argues strenuously that – contrary to a couple of textbook presentations – Egyptian methods were appropriate to their time and context, even superior to contemporary methods in Babylon.

Reimer's case fits well with modern approaches to the history of mathematics, which do their best to take off modern lenses and let the ancient cultures speak for

themselves. At his best, he is truly convincing: given what the Egyptians were trying to do in their calculations, their methods were much more effective than portrayals of them in other popular accounts would have one believe. Unfortunately, no attempt is made to reach out to the current literature; Reimer is content to let the unnamed textbooks stand as straw men. And we could have done without his snide suggestion that these authors are "ignorant, liars, or just plain insane", especially since his treatments of mathematics in other cultures aren't very reliable either. One wonders how an equally enthusiastic advocate of Babylonian mathematics would react to Reimer's arguments; it might be an historic battle.

Reimer's writing style is extremely animated and full of character, which can engage students not already fascinated by arithmetic. Crucially, Reimer consistently explains and defends the value of his material, a rarity in the middle school classroom. Further, alternative methods to standard arithmetic problems can be an important asset for struggling students. Both those frustrated with failure, and those bored with repetition, can gain deeper understanding through such explorations. However, the conceptual links between Reimer's historical introductions and the mathematical topics are frequently weak. Readers may be confused, for instance, about how a discussion of naval superiority in the Nile River suddenly morphs into a study of fractions.

Count Like an Egyptian holds a lot of promise, reflecting modern thinking in both historiography and pedagogy. However, the author's execution is at times over-zealous, which often damages the book's potential contribution. Ultimately, this book is an erratic step in the right direction.

Glen Van Brummelen and
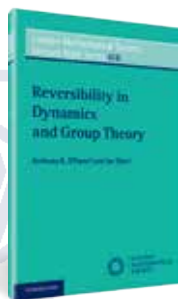Mackenzie Marcotte
Quest University Canada

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.

MARCH 2015

2-6 New Perspectives in Analysis and Probability, Sussex (443)

3 Christopher Zeeman Lecture, London (443)

9-13 Stochastic Systems Simulation and Control ICMS Workshop, Edinburgh (440)

11-13 Complex Dynamics Postgraduate Conference, De Morgan House, London (444)

16-20 LMS Invited Lectures, Professor Michael Shapiro (MSU), Durham (444)

18 Geometric Group Theory Workshop, University College London (444)

19 Mathematics 2015 IMA Conference, Mary Ward House, London (438)

20 An Afternoon in Low-Dimensions, Glasgow (445)

20 LMS WIMCS-Bath Analysis Day, Swansea (445)

23-26 Limit Theorems in Probability, Imperial College, London (443)

23-27 Galerkin Methods with Applications in Weather and Climate Forecasting ICMS Workshop, Edinburgh (440)

23-27 Periodic and other Ergodic Problems INI Workshop, Cambridge (442)

25-27 Elliptic Curves, Modular Forms and Iwasawa Theory Conference, Cambridge (445)

30–31 Flood Risk Assessment IMA Conference, Swansea (438)

30–2 Apr BMC and BAMC Joint Meeting, Cambridge (438)

APRIL 2015

1 LMS 150th Anniversary Celebration Day at BMC-BAMC Joint Meeting, Cambridge (445)

7 LMS Northern Regional Meeting, Lancaster (445)

7-10 Almost-Periodic and other Ergodic Problems INI Workshop, Cambridge (442)

7-11 Homotopical Algebra and Geometry Workshop, Lancaster (441)

12-15 Water Waves and Floating Bodies International Workshop, Bristol (444)

13-15 Postgraduate Combinatorial Conference, Queen Mary University of London (444)

13-17 Mathematics for Health and Disease ICMS Workshop, Edinburgh (440)

13-17 Statistical Properties of Dynamical Systems LMS-CMI Research School, Loughborough (442)

14-17 LMS Women in Maths Event, Oxford (445)

15-16 Breaking Boundaries between Analysis, Geometry and Topology Meeting, Sussex (445)

20 Mathematical Education of Engineers IMA Conference, Loughborough (438)

20-21 Inductive Logic Summer School, Kent (442)

20-22 Computational Complex Analysis for Free Surface Flows Meeting, University College London (444)

20-24 Gradient Flows: From Theory to Application ICMS Workshop, Edinburgh (440)

20-24 Random Planar Structures INI Workshop, Cambridge (441)

22-24 Combining Probability and Logic, University of Kent (442)

28-1 May Mathematical and Computational Models in Evolutionary Biology Workshop, Leicester (445)

MAY 2015

6-8 Optimization and Big Data Workshop, Edinburgh (445)

8-9 Integrability and All That, Loughborough (445)

9 LMS-BSHM De Morgan Meeting, De Morgan House, London (445)

12 Variational Methods for Stationary and Evolutionary Problems, Warwick (445)

18-20 Wales Mathematical Colloquium, Gregynog Hall, Powys (445)

20 LMS-Gresham College Joint Lecture, London (445)

22-23 Groups in Galway, National University of Ireland (445)

28-30 Edinburgh Mathematical Society & Societat Catalana de Matematiques Joint Meeting, Barcelona (443)

JUNE 2015

8-12 Relations between Banach Space Theory and Geometric Measure Theory Workshop, Warwick (444)

10-13 AMS-EMS-SPM International Meeting, Porto, Portugal (442)

15-19 Geometry of Random Walks and SLE, INI Workshop, Cambridge (445)

22-26 Random and other Ergodic Problems INI Workshop, Cambridge (444)

23-26 Hopf-Galois Theory and Galois Module Structure Workshop, Exeter (445)

JULY 2015

1-5 Regularity and Analytic Methods in Combinatorics, LMS-CMI Research School, University of Warwick (445)

3 Hardy Lecture, LMS Meeting, London

5-10 Developments in Modern Probability LMS-CMI Research School, University of Oxford

7 LMS Midlands Regional Meeting, Warwick

13-17 Quantum Groups and Quantum Information Theory Workshop, Herstmonceux Castle, Sussex (445)

20-30 Permutation Groups and Transformation Semigroups LMS-EPSRC Durham Research Symposium, Durham (443)

20-31 LMS Undergraduate Summer School, Loughborough (444)

AUGUST 2015

3-12 New Moonshines, Mock Modular Forms and String Theory LMS-EPSRC Durham Research Symposium, Durham (444)

17-20 Young Researchers in Mathematics Conference, Oxford

23-28 Heidelberg Laureate Forum, Heidelberg (444)

24-28 European Set Theory INI Conference, Cambridge (445)

30-1 Sep Modern Mathematical Methods in Science and Technology, Kalamata, Greece (445)

SEPTEMBER 2015

15-19 Diophantine Equations LMS-CMI Research School, Baskerville Hall, Hay-on-Wye (445)

17 LMS Computer Science Colloquium, The Royal Society London

18-20 LMS/EMS Joint Anniversary Mathematical Meeting, Birmingham (443)

NOVEMBER 2015

13 LMS AGM, London

19-11 Joint Meeting with the Edinburgh Mathematical Society, ICMS, Edinburgh

DECEMBER 2015

7-11 Combinatorial Mathematics and Combinatorial Computing Australasian Conference, Brisbane, Australia (445)

10-11 LMS Joint Meeting with the Edinburgh Mathematical Society, Edinburgh (443)

14-17 LMS South West & South Wales Regional Meeting, Southampton

15-16 LMS Prospects in Mathematics, Loughborough

PAST PRESIDENTS AT THE 150TH ANNIVERSARY LAUNCH

Goldsmiths Hall, 16 January 2014

Past President John Toland

Past Presidents
Terry Wall, John Ringrose and John Ball

Immediate Past President Graeme Segal
and Past President Brian Davies

Past President Nigel Hitchin

Past President Frances Kirwan