LONDON MATHEMATICAL SOCIETY

NEWSLETTER

NEWSLETTER ONLINE:
newsletter.lms.ac.uk

MATHEMATICIANS HONOURED IN NEW YEAR'S LIST

The London Mathematical Society (LMS) would like extend its warmest congratulations to its former President, Professor Frances Kirwan, FRS, and also to Professor Celia Hoyles, current President of the Institute of Mathematics and its Applications (IM), on becoming Dames Commander of the Order of the British Empire in the New Year's Honours list.

Frances Kirwan receives her honour for services to Mathematics. She is Professor of Mathematics at the University of Oxford with an outstanding research contribution in algebraic geometry. Throughout her notable career she has received many honours, including being elected a Fellow of the Royal Society in 2001 (only the third female mathematician to attain this honour), and the President of the London Mathematical Society from 2003 to 2005 (only the second female ever elected). Professor Kirwan is a member of a number of UK, European and International Scientific Advisory Committees, including that of the Max Planck Institute for Mathematics in Bonn. Professor Kirwan has for

many years been active in addressing the gender imbalance in mathematics and was a member of the LMS Women in Mathematics Committee from 2008 to 2013. She has also been active in the European Women in Mathematics, having served as Convenor, as well as chairing the Prizes Committee of the European Mathematical Society's 6th European Congress of Mathematicians in 2013. Professor Kirwan has recently been awarded the LMS Senior Whitehead Prize.

Celia Hoyles receives her honour for services to Education. She is Professor of Mathematics Education at the Institute of Education, London, and formerly Director of the National Centre for Excellence in the Teaching of Mathematics. She has been a leading advocate for the development of mathematics education in the UK and has directed many research projects in this area. Professor Hoyles was awarded an OBE in 2004 for services to Mathematics Education. In the same year she took up the position of the government's Chief Adviser for Mathematics, a role she held until 2007. In 2011 she received the first Royal Society Kavli Education Medal, awarded to 'an individual who has made a significant impact on science or math-

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ematics education within the UK'. Professor Hoyles became IMA President in January this year.

Professor Terry Lyons, FRSE FLSW FRS, President of the LMS, said: 'Mathematics is vital to society in so many different ways and we are delighted that the outstanding contributions of Frances Kirwan and Celia

Hoyles have been recognised. The huge contribution to the mathematical community depends on the effectiveness of mathematics education and on the development of world-class mathematical research. Both are indispensible and we are very fortunate to have benefited from the services of both Frances Kirwan and Celia Hoyles'.

The LMS would also like to congratulate John Pullinger, President, Royal Statistical Society, Librarian and Director General, Information Services, House of Commons on receiving the honour of Companion of the Order of the Bath (CB) for services to Parliament.

MATHEMATICS POLICY ROUND-UP

January 2014

GOVERNMENT POLICY

Autumn Statement 2013
The government has announced it will be publishing a Science and Innovation Strategy for the Autumn Statement 2014. This strategy will set out how the government's long-term commitment on science capital announced at the Spending Round 2013 will deliver the research and innovation infrastructure needed by the UK.

Other notable announcements included:

Higher Education Student Numbers
- Extra funding for STEM students of £50 million per academic year from 2015–16.
- Increase the cap for HEFCE-funded institutions by 30,000 for the academic year 2014–15.
- Remove the cap on student numbers at publicly-funded higher education institutions in England by 2015–16.

National Infrastructure Plan 2013
- The National Infrastructure Plan 2013 brings investments related to science and innovation into its list of priority investments for the first time.

- This comes after the government announced as part of the 2013 Spending Review that it was increasing science capital funding in real terms from £0.6 billion in 2012–13 to £1.1 billion in 2015–16, and in line with inflation to 2016–17. The government will also set a long-term capital budget for science in the next Parliament growing in line with inflation to 2020–21.
The full Autumn Statement 2013 is available at http://tinyurl.com/ps6t3ru.

RESEARCH

Centre for Doctoral Training at UCL
As reported in the last policy round up Universities and Science Minister, David Willets, has announced the UK's largest investment in engineering and physical sciences PhDs will train scientists and engineers in Centres for Doctoral Training (CDTs). It will fund over 3,500 students at over 70 new CDTs spread across 24 universities. One of the Centres which will be funded is EPSRC Centre for Doctoral Training in Geometry and Number Theory at the Interface (Professor Michael Singer, UCL). This was inadvertently omitted from the original list. A revised list is available on the LMS website at www.lms.ac.uk/policy/doctoral-training.

SCHOOLS AND COLLEGES

New maths hubs
Parliamentary Under-Secretary (Department for Eduction) Elizabeth Truss announced £11 million for new maths hubs to drive up the quality of maths teachers—as international test results showed England's performance had stagnated.

The money will allow the development of a national network of around 30 'mathematics education strategic hubs' (MESH). Each will be led by a teaching school and will provide support to all schools in the area, across all areas of maths education, including:
- recruitment of maths specialists into teaching;
- initial training of maths teachers and converting existing teachers into maths;

- coordinating and delivering a wide range of maths continuing professional development (CPD) and school-to-school support;
- ensuring maths leadership is developed – eg running a programme for aspiring heads of maths departments; and
- helping maths enrichment programmes to reach a large number of students from primary school onwards.
More information is available at http://tinyurl.com/p8jn98o.

Institute of Physics Report: Gender imbalances in terms of subject choice
Almost one half (49%) of co-ed state-funded schools across England have increasing gender imbalances in terms of subject choice while fewer than one in five (19%) are countering them.

The results demonstrate that many girls and boys are being denied opportunities and suggest schools are paying insufficient attention to countering gender stereotypes.

The report Closing Doors: Exploring gender and subject choice in schools uses the National Pupil Database to track and analyse students' progression to A-level in six subjects—physics, mathematics, economics, biology, English and psychology.

Although individual teachers are clearly important, the evidence strongly suggests that it is the school culture that determines whether the damaging effects of gender imbalances are overcome or at least reduced.

The full report is available at www.iop.org/publications/iop/2013/file_62083.pdf.

Elizabeth Truss at the launch of Closing Doors report
The Parliamentary Under-Secretary, Elizabeth Truss, MP, spoke at the launch of the Institute of Physics report.

The full transcript of the speech is available at http://tinyurl.com/khslyl8.

Dr John Johnston
Joint Promotion of Mathematics

THE HEIDELBERG LAUREATE FORUM 2014

The call for applications for the 2014 Heidelberg Laureate Forum is now open. The Heidelberg Laureate Forum is a unique opportunity for excellent young mathematicians and computer scientists to meet eminent experts from both fields in a very special environment. The first Forum took place in September 2013 and brought together outstanding students in mathematics and computer science with winners of the most prestigious awards in these two disciplines: Abel, Fields, Nevanlinna and Turing.

More information about the Heidelberg Laureate Forum is available at www.Heidelberg-Laureate-Forum.Org/. Information on applications is available at https://application.heidelberg-laureate-forum.org/intern/start_start_for.php. **The deadline for applications is 28 February 2014**.

MATHEMATICS TEACHER TRAINING SCHOLARSHIPS

The Mathematical Sciences learned societies are working together to deliver up to 250 Scholarships for trainee secondary mathematics teachers who will start their training in the 2014/15 academic year in England. This is funded by the Department for Education as part of their activities to encourage more teachers in 'shortage subjects'—a list headed by mathematics and physics.

The Scholarship scheme focuses on attracting well qualified and passionate individuals who can inspire pupils and dispel the negative images associated with learning mathematics. There are over 2,500 mathematics teacher training places in England this year and we want to help fill these with prospective teachers who love mathematics and have the potential to create that 'wow' moment for their pupils.

A Scholarship provides a tax free payment of £25,000 during the training year, at least £5,000 more than the highest bursary available. Of course it brings much more including the kudos of a prestigious award and other non financial benefits including two year's free membership of the IMA, LMS, RSS and MEI and being part of a supportive community in the training year and beyond. Candidates should have or expect to achieve a First, 2.1 or post-graduate degree in a subject with a strong mathematical content (a 2:2 may be considered with significant relevant experience) or have extensive mathematical professional experience. Applicants who have completed or will complete a Mathematics Subject Enhancement Course prior to September 2014 may also apply.

The robust assessment process consists of two mathematical tests (online multiple choice and written exam), a discussion group and formal interview and is carried out by assessors involved in mathematical education. If you know anyone who is interested in teaching mathematics or who you think would be an excellent mathematics teacher ask them to go to www.ima.org.uk/careers/teacher_scholarships.cfm for more information.

Dagmar Waller
Project Manager, IMA

ICM 2014

LMS Travel Grants

The London Mathematical Society has set aside funds to be used for making grants to support the attendance of UK-based mathematicians at the International Congress of Mathematicians, Seoul, 13–21 August 2014 (www.icm2014.org).

The Society would particularly like to support those mathematicians at an early stage in their career, including postdocs.

To apply, please complete the application form (which can be downloaded from the Society's website www.lms.ac.uk/ICM2014LMSTravelGrants) and return to Elizabeth Fisher, ICM 2014 Travel Grants, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HS.

You do not need to be an LMS member to apply. Deadline: **14 February 2014**. Applicants will be informed of the outcome by mid-March.

CHRISTOPHER ZEEMAN MEDAL

Call for Nominations

The Councils of the LMS and the IMA are delighted to invite nominations for the 2014 award of the Christopher Zeeman Medal, which is the UK award dedicated to recognising excellence in the communication of mathematics.

The IMA and LMS wish to honour mathematicians who have excelled in promoting mathematics and engaging with the general public. They may be academic mathematicians based in universities, mathematics school teachers, industrial mathematicians, those working in the financial sector or indeed mathematicians from any number of other fields.

Most importantly, these mathematicians will have worked exceptionally to bring mathematics to a non-specialist audience, whether it is through giving public lectures, writing books, appearing on radio or television, organising events or through an entirely separate medium. The LMS and IMA want to celebrate the achievements of mathematicians who work to inspire others with their work.

The award is named after Professor Sir Christopher Zeeman, FRS, president of the LMS between 1986 and 1988. His notable career has been pioneering not only in the fields of topology and catastrophe theory but also because of his ground breaking work in bringing his beloved mathematics to the wider public.

Sir Christopher was the first mathematician to be asked to deliver the Royal Institution Christmas Lectures in 1978, a full 160 years since they began. His Mathematics into Pictures lectures have been cited by many young UK mathematicians as their inspiration.

In recognition of both his work as a mathematician and his contribution to the UK mathematics community, Sir Christopher received the LMS–IMA David Crighton Medal in 2006.

A form for nominations is available at www.lms.ac.uk/prizes/nominations-ima-lms-prizes or from Duncan Turton at: London Mathematical Society, De Morgan House, Russell Square, London WC1B 4HS; or email: prizes@lms.ac.uk.

LMS–CMI RESEARCH SCHOOLS

CALL FOR PROPOSALS

The London Mathematical Society and Clay Mathematics Institute invite proposals for Research Schools in 2015.

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 2015.

Prospective organisers should send an outline proposal to Elizabeth Fisher (Research.Schools@lms.ac.uk) by **Tuesday 1 April 2014**.

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).

UK HARMONIC ANALYSIS AND PDE RESEARCH NETWORK

Report

The *UK Harmonic Analysis and PDE Research Network*, generously supported by an LMS Scheme 3 grant, held its 24th meeting at the University of Birmingham on the 20 November 2013. The meeting, which largely focussed on the rapidly-developing connections between harmonic analysis, arithmetic combinatorics and combinatorial geometry, had four invited speakers and attracted about 25 participants. The first speaker, Tony Carbery (Edinburgh), described recent progress on certain incidence-geometric problems of Kakeya type and the startling effectiveness of emerging methods from algebraic combinatorics. After lunch Julia Wolf (Bristol) gave a very elegant overview of some of the current challenges in higher order Fourier analysis, followed by András Máthé (Warwick), who presented some beautiful results on the existence of similar copies of prescribed sequences in measureable sets. The meeting concluded with Javier Parcet (ICMAT, Madrid) and a broad and far-reaching perspective on Fourier multiplier theorems and dimension-free analysis in classical and abstract harmonic analysis. This lively and stimulating workshop was followed by a trip to a city-centre pub and an informal dinner involving speakers, students, visitors and academic staff.

Jon Bennett, Neal Bez and Marina Iliopoulou
(Birmingham)

VISIT OF ISABELLE CHALENDAR

Dr Isabelle Chalendar (University of Lyon 1, France) will visit the UK in March 2014. Her interests lie in complex analysis and operator theory, including invariant subspaces. Dr Chalendar will give the following lectures:

- Oxford, Tuesday 11 March at 5 pm
  Estimates near the origin for functional calculus on operator semigroups
- Leeds, Thursday 13 March at 4 pm
  Inner functions in operator theory
- Newcastle, Tuesday 18 March at 4.30 pm
  Inner functions in operator theory

Further information is available from Jonathan Partington, j.r.partington@leeds.ac.uk, or the webpage http://tinyurl.com/lmsscheme2. The visit is supported by an LMS Scheme 2 grant.

RECORDS OF PROCEEDINGS AT LMS MEETINGS

SOUTH WEST & SOUTH WALES REGIONAL MEETING

held on 16 December 2013 at the University of Swansea as part of the Regional Workshop on Categorical and Homological Methods in Hopf Algebras. Over 35 members and visitors were present for all or part of the meeting.

The meeting began at 2.00 pm with The General Secretary, Professor Stephen Huggett, in the Chair.

No members were elected to membership.

Three members signed the book and were admitted to the Society.

Professor Tomasz Brzezinski introduced a lecture given by Professor Shahn Majid on Reconstruction and quantisation of Riemannian manifolds

Professor Brzezinski then introduced the second lecture given by Professor Toby Stafford entitled Classifying noncommutative projective surfaces.

After tea, Professor Brzezinski introduced the final lecture given by Professor Stefaan Caenepeel on Bicategories, two-dimensional cohomology, Galois coobjects, pseudomonoids and the Brauer group.

The General Secretary expressed the thanks of the Society to the local organisers for putting on such an interesting meeting.

Afterwards, a reception was held in the Department of Mathematics, followed by dinner hosted at Fulton House.

LMS SOUTH WEST AND SOUTH WALES REGIONAL MEETING 2013

Report

The 2013 LMS South West and South Wales Regional Meeting was held at Swansea University on Monday 16 December and was followed by the workshop on *Categorical and Homological Methods in Hopf Algebras*. Both the meeting and workshop were organised by Edwin Beggs and Tomasz Brzezinski (Swansea), and were funded by the LMS.

After a few words of welcome from the local organiser, the meeting was opened by the LMS General Secretary, Dr Stephen Huggett. The minutes of the previous Society meeting were approved and new members were invited to sign the Membership Book. On this occasion three members signed the book. Once the formal proceedings were completed the scientific activities started.

The first speaker of the afternoon was Professor Shahn Majid (Queen Mary University of London), who delivered a lecture entitled *Reconstruction and quantisation of Riemannian manifolds*. Professor Majid explained how the Riemannian structure on a manifold can be reconstructed from
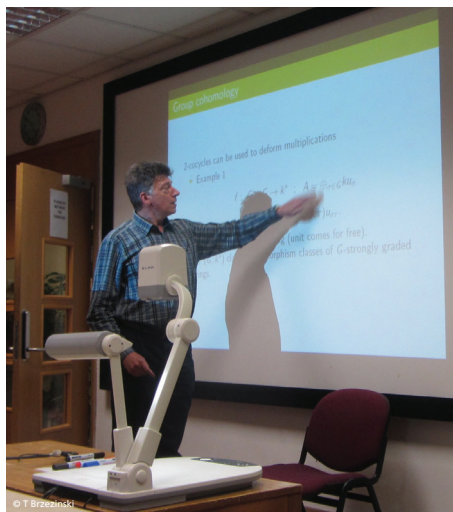

Stefaan Caenepeel

its codifferential. In this way Riemannian geometry can be seen as emerging out of a central extension problem for differential graded algebras. In particular, this allows one to recover a differential quantisation of spacetime.

The second lecture, entitled *Classifying noncommutative projective surfaces*, was delivered by Professor Toby Stafford (University of Manchester). Professor Stafford began by explaining the basic idea of noncommutative algebraic geometry, namely that it
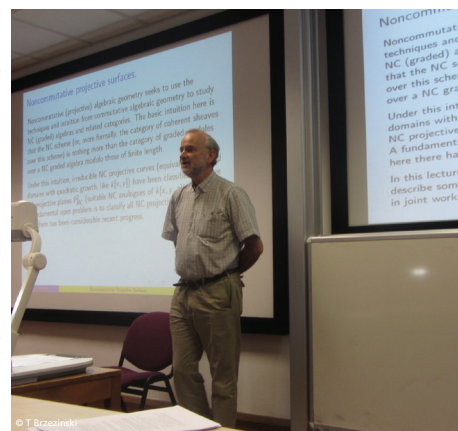
Toby Stafford
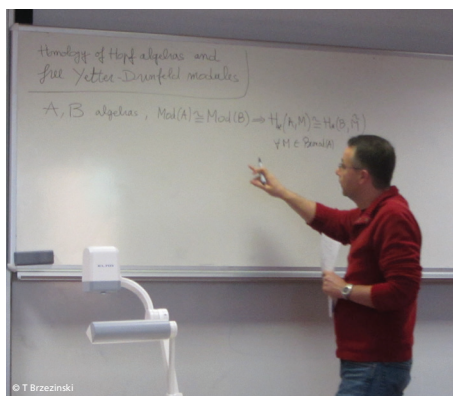
Julien Bichon

uses the techniques and intuition from commutative algebraic geometry to study non-commutative (graded) algebras and related categories. The basic intuition here is that one should treat the category of graded modules over a noncommutative graded algebra modulo modules of finite length as the category of coherent sheaves over a noncommutative scheme. In the second part of his talk Professor Stafford described his recent results on classifying subalgebras of the Sklyanin algebra obtained in collaboration with D. Rogalski and S. Sierra.

The final talk of the afternoon was given by Professor Stefaan Caenepeel (Vrije Universiteit Brussel). In his lecture, entitled *Bicategories, two-dimensional cohomology, Galois coobjects, pseudomonoids and the Brauer group*, Professor Caenepeel showed how one can associate bicategories to complexes of restricted Picard groupoids. The equivalence classes of objects in these bicategories form two-dimensional cohomology groups and classical results about cohomological interpretation of, for instance, the Brauer group, and the group of Galois coobjects over a commutative Hopf algebra, can be refined to two-equivalences between certain bicategories and the bicategories of cocycles.

After the conclusion of the mathematical proceedings of the meeting, the participants were invited for a wine reception at the Department of Mathematics. The meeting

Kornél Szlachányi

ended with the Welsh dinner in Fulton House, Swansea University.

The workshop had talks which covered recent developments in categorical and homological approaches to Hopf algebras and their generalisations. The speakers were Marcelo Aguiar (Cornell University), Julien Bichon (Université Blaise Pascal Clermont-Ferrand II), Alain Bruguieres (Université Montpellier II), Martin Crossley (Swansea University), Jose Gomez-Torrecillas (Universidad de Granada), Ulrich Kraehmer (University of Glasgow), Timothy Logvinenko (Cardiff University), Claudia Menini (Universita degli Studi di Ferrara), Kornél Szlachányi (Wigner RCP, RMKI, Budapest), Marc Wambst (Université de Strasbourg), Simon Willerton (University of Sheffield) and Robert Wisbauer (Heinrich-Heine Universität Düsseldorf).

Tomasz Brzezinski
Swansea University

Timothy Logvinenko

Robert Wisbauer

LMS 150TH ANNIVERSARY
POSTDOCTORAL MOBILITY GRANTS
2014-15 Awards

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

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

Candidates are asked to provide with their application:

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

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

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

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

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

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

CECIL KING TRAVEL SCHOLARSHIP

The London Mathematical Society annually awards a £5,000 Cecil King Travel Scholarship in Mathematics, to a young mathematician of outstanding promise. The Scholarship is awarded to support a period of study or research abroad, typically for a period of three months. Study or research in all areas of mathematics is eligible for the award.

The award is competitive and based on a written proposal describing the intended programme of study or research abroad, and the benefits to be gained from such a visit. A shortlist of applicants will be selected for an interview during which they will be expected to make a short presentation on their proposal.

Applicants must be nationals of the UK or the Republic of Ireland, either registered for or having completed a doctoral degree within 12 months of the closing date.

Applications should be made using the form available on the Society's website (www.lms.ac.uk/content/cecil-king-travel-scholarship) or by contacting education@lms.ac.uk. The closing date for applications is **Friday 7 March 2014**. It is expected that interviews will take place in London in late April or early May.

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

SUMS MEETING

Report

The University Mathematics Society at St Andrews, known as SUMS, held a meeting on 20 November 2013, with the help and funding of an LMS Undergraduate Society Meeting grant.

The main attraction of the event was a talk by Dr Colin Wright on the practice of juggling and the mathematical theory that underpins it. His enthusiasm for the subject was overwhelming, and the content was varied enough to keep both the young children and mathematics lecturers in the audience entertained. In the course of an entertaining and enlightening hour and a quarter a story was told about mathematics, with the emphasis on the unexpected places where it crops up. The talk was followed by a wine and cheese event, which allowed people to interact with the speaker on a more conversational basis, as well as discuss the talk and socialise with each other. Colin was happy to answer the questions whether they were about juggling or other unexpected applications of mathematics.

Overall the wine and cheese went down well, and people seemed to really enjoy themselves. The talk was a complete success and with the attendance at 60 it was one of the best attended meetings of the society for two years. We hope to host similar events in the future. Further information about SUMS can be found at https://www.facebook.com/groups/StAndrews.SUMS/,

Grant Ross
St Andrews University

WINE REPORT

I attended the Women in Numbers—Europe (WINE) conference held in Luminy, France from 14 to 18 October 2013. This was part of a broader initiative for female mathematicians working in the field of Number Theory, which is building a community of female number theorists who can support each other throughout their careers. As a result of the conference I am now in a collaboration with six other mathematicians including two professors and two tenured associate professors in four countries. As a fourth year PhD student currently applying for post-docs this is hugely beneficial to my career.

Women in Numbers is the brainchild of Professor Kristin Lauter of Microsoft Research, Redmond, USA. She organised the first Women in Numbers conference in Banff, Canada in 2008. The idea was to foster genuine mathematical links and collaborations between junior and senior female number theorists. This would not only stimulate research but also create an invaluable network of contacts for those involved, particularly for the more junior mathematicians, who would then have established academics with whom they had worked and whom they could ask for recommendation letters.

There have since been two further Women in Numbers conferences: WiN 2, also in Banff in 2011, and the above Women in Numbers—Europe (WINE) conference in October, as well as several Women in Sage conferences for women who develop the open source computer algebra package Sage. More Women in Numbers and Women in Sage conferences are planned. The format of the WINE conference was as follows: the participants were carefully selected so as to fit into research groups of roughly six researchers, each headed by two experienced mathematicians who had devised a project to be worked on for the week of the conference and beyond. Each group contained mathematicians in various stages of their careers, the most junior being students in the latter stages of their PhDs. Each research group worked on its project intensively for the week and presented findings at the end of the conference. The WiN conferences also publish conference proceedings approximately one year after the event containing the research that resulted from the meeting.

From its origins as a conference, WiN has now expanded into a community of female number theorists. Most significantly there is the wonderful Women in Number Theory website http://womeninnumbertheory.org/ and the WiN mailing list maintained by Dr Michelle Manes of the University of Hawaii. On the website one may find details of all the past and future conferences and proceedings, a comprehensive list of female number theorists listed by both research area and location, details of the published and current research that was initiated at WiN conferences, and useful links for number theorists

and women in mathematics. The mailing list is used by subscribers to advertise conferences, funding opportunities, job postings and any other information that may be of interest.

The Women in Numbers initiative has now inspired several other specialised conferences for female mathematicians including Algebraic Combinatorics, Shape Modelling, Topology and Dynamical Systems.

Jenny Cooley
Warwick University

EUROPEAN NEWS

EMS Schools in Applied Mathematics

Currently, four series of summer schools in applied mathematics take place every year under the EMS banner. Their existence and organisation are part of the activities of the EMS Applied Mathematics Committee. The EMS considers as a priority the goal that the schools keep a high scientific level and focus on topics of relevant impact. The EMS helps these schools in fundraising and in particular, contributes towards the participation of young researchers from European and Mediterranean countries. Initially, there was a school organised by IMPAN in Bedlewo and a school organised by CIME taking place every year. In 2010, a summer school in biomathematics joined ESSAM. It is organised every year by the ESMTB (European Society for Mathematical and Theoretical Biology). The last ESSAM school was created in 2011: a summer school in mathematical finance. It is organised by the Institut Louis Bachelier.

The programme committees of the organising institutions incorporate a representative of the EMS Applied Mathematics Committee for the planning of future schools and to certify their scientific level and the fulfilment of EMS requirements. If you want to create such a series or you are in charge of an existing one and you want to become part of the ESSAM schools, please send a message to Helge Holden at holden@math.ntnu.no.

List of ESSAM 2013 schools:
- IMPAN-EMS Bedlewo School: EMS School on Computational aspects of gene regulation (supported by Cost)
- CIME-EMS Summer School in Applied Math-

ematics: Vector-valued partial differential equations and applications (supported by the EMS)
- EMS-ESMTB Summer School: Multiscale models in the life sciences
- Sixth European Summer School: Financial mathematics

More information about these schools can be found at the website www.euro-math-soc.eu/EMS-AMC.

[Source: EMS Newsletter December 2013 p 7]

Call from the EMS Committee

for European Solidarity

The EMS Committee for European Solidarity calls for travel grant applications from young researchers and funding requests from organisers of conferences or advanced courses to be held in 2014 or 2015. Decisions will be taken at two deadlines, normally in April and October. Further information and application forms can be found in the Committee's web page www.euro-math-soc.eu/comm-eur-solid.html.

[Source: EMS e-news, 20 December 2013 http://euro-math-soc.eu/news.html]

Heinz Hopf Prize and Lectures 2013

The Heinz Hopf Prize, awarded every two years, has been awarded to Helmut Hofer (Princeton) and Yakov Eliashberg (Stanford). The prize ceremony took place on 3 December 2013 presented by Professor Dr Roland Siegwart, Vice President of ETH Zurich. Lectures were given by the prize winners.

[Source: www.math.ethz.ch/hopf]

Fermat Prize 2013

The Fermat Prize awarded once every two years by the Institut de Mathématiques de Toulouse has been awarded jointly to Camillo De Lellis for his fundamental contributions (in collaboration with László Székelyhidi) to the conjecture of Onsager about dissipative solutions of the Euler equations and for his work on the regularity of minimal surfaces; and to Martin Hairer for his contributions to the analysis of stochastic partial differential equations, especially for the regularity of solutions and convergence to equilibrium.

[Source: EMS e-news, 22 November 2013 http://euro-math-soc.eu/news.html]

LMS–EPSRC DURHAM SYMPOSIA

CALL FOR PROPOSALS

The London Mathematical Society invites proposals for Durham Symposia in 2015 and beyond.

The LMS and the EPSRC intend to support at least two Durham Symposia in 2015.

The Symposia began in 1974, and have now become an established and recognised series of international research meetings. They provide an excellent opportunity to explore an area of research in depth, to learn of new developments, and to instigate links between different branches. The format is designed to allow substantial time for interaction and research. The meetings are by invitation only and held in July and August, usually lasting 10 days, with up to 70 participants, roughly half of whom will come from the UK. They are held at the University of Durham.

Prospective organisers should send a formal proposal to the Durham Representative, Dirk Schuetz (dirk.schuetz@durham.ac.uk) by **Tuesday 1 April 2014**.

Proposals should include:

- A full list of proposed participants, divided into specific categories (please see the guidance on submission of proposals at www.lms.ac.uk/events/durham-symposia for more details). Proposers are encouraged to actively seek to include women speakers and speakers from ethnic minorities, or explain why this is not possible or appropriate.
- A detailed scientific case for the symposium, which shows the topic is active and gives reasons why UK mathematics would benefit from a symposium on the proposed dates.
- Details of additional support from other funding bodies.
- Where appropriate, prospective organisers should consider the possibility of an 'industry day'.

The Durham Representative will provide an estimated cost for accommodation for the symposium and estimated travel costs for each participant.

For further details about the Durham Symposia, please visit the Society's website: www.lms.ac.uk/events/durham-symposia.

Before submitting: Organisers are welcome to discuss informally their ideas with the Durham Representative (dirk.schuetz@durham.ac.uk) and/or the Chair of the Research Meetings Committee, Professor Ulrike Tillmann FRS (RMC.Chair@lms.ac.uk).

LMS WOMEN IN MATHEMATICS DAY 2014

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

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

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

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

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

Programme

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

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

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

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

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

LMS Advancing Mathematics — London Mathematical Society

RMetS Royal Meteorological Society
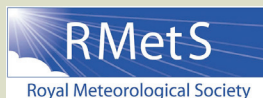
JOINT SOCIETY MEETING
with
The Royal Meteorological Society

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

Wednesday 16 April 2014 at 2pm

THE MATHS OF PLANET EARTH

Speakers:

Chris Budd (University of Bath)

Tamsin Edwards (University of Bristol)

Chris Jones (The University of North Carolina)

Ted Shepherd, FRMetS (University of Reading)

Emily Shuckburgh (British Antarctic Survey)

John Taylor (DAMTP, University of Cambridge)

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

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

This meeting is sponsored by The Grantham Institute for Climate Change, an Institute of Imperial College London, and the London Mathematical Society. Non-members are welcome to attend these meetings. Where seating capacity is limited, priority will be given to members.

LMS Advancing Mathematics — London Mathematical Society

MARY CARTWRIGHT LECTURE AND SOCIETY MEETING
Friday 28 February 2014
University of York, Ron Cooke Hub, Heslington East, YO10 5GE

3.30   Opening of the Meeting
        Anne Taormina
        (University of Durham)
        Moonshines

4.30   Tea

5.00   Mary Cartwright Lecture
        Reidun Twarock
        (University of York)
        Viruses and geometry: hidden symmetries in virology

6.00   Wine reception

© Christine Cockett

Reidun Twarock
Mary Cartwright Lecturer 2014

To register, please contact Katy Henderson (womeninmaths@lms.ac.uk) by **Friday 21 February**. Late registrations for places may still be accepted, subject to availability.

The reception will be followed by a dinner at 31 Castlegate, at a cost of £35 per person, inclusive of wine. If you would like to attend the dinner, please contact Katy Henderson (womeninmaths@lms.ac.uk) by **Friday 21 February**.

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

INTERNATIONAL CONGRESS FOR WOMEN IN MATHEMATICS 2014

The International Congress for Women in Mathematics 2014 (ICWM2014) will take place in Seoul on 12 and 14 August 2014, bringing together women mathematicians and their supporters from around the world.

The meeting on 12 August will take place in Ewha Womans University. ICM2014 opens on 13 August and the programme of ICWM2014 on 14 August is partially integrated in that of ICM2014, and occurs at the same place, COEX.

The programme includes plenary lectures by: Laura DeMarco, Isabel Dotti, Jaya Iyer, Motoko Kotani, Hee Oh, Gabriella Tarantello and Donna Testerman, a panel session Mathematics and Women: different regions, similar struggles, a poster session on 12 August, and the ICM Emmy Noether lecture by Georgia Benkart on 12 August, followed by a reception at ICWM Night. Transport to the ICM welcoming reception on 12 August will be provided. Information and registration at www.kwms.or.kr/icwm2014.

KENT SPECTRAL THEORY MEETING

The *Kent Spectral Theory Meeting* will take place at the University of Kent in Canterbury from 14 to 17 April 2014. It will focus on direct and inverse problems for ordinary and partial differential equations, nonselfadjoint operators, dissipative operators and functional models, block operator matrices, periodic and quasiperiodic differential operators, orthogonal polynomials and spectral theory of Jacobi matrices, quantum graphs, Toeplitz operators, Riemann-Hilbert problems and mathematical problems in nano-electronics. The invited speakers include

- Jussi Behrndt (TU Graz)
- Malcolm Brown (Cardiff University)
- Christina Camara (Lisbon)
- Brian Davies, FRS (King's College, London)
- Plamen Djakov (Istanbul)
- Desmond Evans (Cardiff)
- Gerd Grubb (Copenhagen)
- Matthias Hieber (Darmstadt)
- Jan Janas (Krakow)
- Stanislas Kupin (Bordeaux)
- Pavel Kurasov (Stockholm)
- Heinz Langer (Vienna)
- Ari Laptev (Imperial College, London)
- Marco Marletta (Cardiff)
- Boris Pavlov (St Petersburg/Auckland)
- Michael Plum (Karlsruhe)
- Roman Romanov (St Petersburg)
- Alexander Sobolev (University College London)
- Christiane Tretter (Bern),

Further information, including registration details, can be found on the website www.kent.ac.uk/smsas/events/spectral-theory.html. For queries email spectraltheory@kent.ac.uk.

There is some financial support available for UK based research students. The meeting is supported by the European Union Marie Curie Action, University of Kent Faculty of Sciences and an LMS Conference grant.

BRITISH MATHEMATICAL COLLOQUIUM 2014

The 66th British Mathematical Colloquium will take place at Queen Mary University of London from **7 to 10 April 2014**. Further to the announcement of the plenary and morning speakers, in the December LMS *Newsletter*, the afternoon workshop speakers will include the following:

COMBINATORICS
Organised by Mark Walters (QMUL):
David Conlon (Oxford), Mark Jerrum (QMUL), Tom McCourt (Plymouth), Oleg Pikhurko (Warwick), Tom Sanders (Oxford), Gregory Sorkin (LSE)

ERGODIC THEORY
Organised by Oliver Jenkinson (QMUL):
Alan Haynes (York), Ian Morris (Surrey), Mark Pollicott (Warwick), Sebastian van Strien (Imperial), Dan Thompson (Ohio State)

GEOMETRY
Organised by Behrang Noohi (QMUL) and Richard Thomas (Imperial):
Arend Bayer (Edinburgh), Kai Behrend (British Columbia), Hélčne Eynard-Bontemps (Pierre et Marie Curie, Paris), András Juhász (Oxford), André Neves (Imperial), Oscar Randal-Williams (Cambridge)

GROUP THEORY
Organised by John Bray (QMUL) and Nikolay Nikolov (Oxford):
John Britnell (Imperial), Timothy Burness (Bristol), Pierre-Emmanuel Caprace (Louvain), Montserrat Casals-Ruiz (Oxford), David Craven (Birmingham), Anton Evseev (Birmingham)

NUMBER THEORY
Organised by Sarah Zerbes (UCL):
Jennifer Balakrishnan (Oxford), Rebecca Bellovin (Imperial), Nuno Freitas (Bayreuth), David Loeffler (Warwick), Abhishek Saha (Bristol), Igor Wigman (King's)

The registration is now open through the conference website: www.maths.qmul.ac.uk/bmc2014 and the registration fee will increase from 15 February 2014.

Google are funding PhD students to attend the conference and we are inviting applications via the conference website.

The BMC workshops are supported by the London Mathematical Society and by the Clay Mathematics Institute.

Contact: Ivan Tomašić or Behrang Noohi at bmc2014@qmul.ac.uk.

LMS SOCIETY MEETING AT THE BMC

8 April 2014 at 11.30 am

Queen Mary, University of London

Claire Voisin (CNRS and École Polytechnique)

Points, zero cycles, and rationality questions

Claire Voisin

The British Mathematical Colloquium will take place in the School of Mathematics, Queen Mary, University of London, from 7 to 10 April 2014.

The first talk will start at 15:30 on Monday 7 April, and the last talk will end at 12:30 on Thursday 10 April.

To register, visit www.maths.qmul.ac.uk/bmc2014/registration.

Early bird registration closes on 14 February 2014.
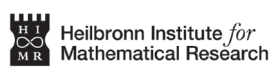
BUILDING BRIDGES: 2ND EU/US SUMMER SCHOOL ON AUTOMORPHIC FORMS AND RELATED TOPICS

LMS–CMI Research School

Bristol

30 June–5 July 2014

Organisers: Lynne Walling (Bristol), Jennifer Beineke (Western New England University)

Automorphic forms are present in almost every area of modern number theory. In recent decades there has been a starburst of activity and progress in this broad area, leading to many new directions, applications, and connections with other areas within mathematics and mathematical physics. The purpose of the research school is to provide graduate students and early career researchers with training on some topics that are having great impact on current research in automorphic forms, allowing them to make new connections, with areas related to their current research programs and with other researchers. The school will be comprised of three 2-day intensive mini-courses, each team-taught by a pair of experts, and supplemented by afternoon problems sessions.

- *Explicit Methods for Modular Forms and L-functions* (**John Cremona**, University of Warwick and **Tim Dokchitser**, University of Bristol)
- *The Legacy of Ramanujan* (**William Duke**, UCLA and **Ozlem Imamoglu**, ETH Zurich)
- *The Langlands Program* (**James Cogdell**, Ohio State University and **Solomon Friedberg**, Boston College)

For further information please visit: www.maths.bris.ac.uk/~mamjd/bb/index.html.

Applications: Research students, post-docs and those working in industry are invited to apply. The closing date for applications is **15 March 2014**. Numbers will be limited and those interested are advised to make an early application. Applications should be made using the registration form available via the Society's website at: www.lms.ac.uk/events/lms-cmi-research-schools and applicants should have a letter of support sent to the organisers at: eu.us.afw.2014@gmail.com.

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

Financial support: There is some support available for travel and local costs; requests for support should be indicated on the application form.

Fees: Registration for a graduate student is £150, and for an early career researcher it is £250, although these fees may be lowered or waived as is appropriate. Fees are not payable until a place on the course is offered but will be due by **15 May 2014**.

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.

LMS INVITED LECTURER 2014

Professor Jouko Väänänen

(University of Helsinki and University of Amsterdam)

14–17 April 2014

University of East Anglia

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

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

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

There will also be supplementary lectures by:

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

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

Deadline for funding: 15 February 2014.

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

BRITISH APPLIED MATHEMATICS COLLOQUIUM 2014

Cardiff University: 28–30 April 2014

Plenary Speakers

- Martine Ben Amar (Ecole Normale Supérieure, Paris)
  Morphogenesis and Embryogenesis
- Helen Byrne (University of Oxford)
  Angiogenesis under the Microscope: New Mathematical Perspectives on an Old Problem
- Michael Graham (University of Wisconsin at Madison)
  The Stewartson Lecture
  Drag Reduction and the Dynamics of Turbulence in Simple and Complex Fluids
- Ross McPhedran (University of Sydney)
  Ruling the Waves: from Photonic Crystals to Metamaterials
- Alfio Quarteroni (Ecole Polytechnique Federale de Lausanne and Politecnico di Milano)
  The IMA Lighthill Lecture
  The Challenge of Complexity in Numerical Simulations

Public Lecture

- Mary Lou Zeeman (Bowdoin College)
  Harnessing Maths to Understand Tipping Points in Climate and Sustainability

Further details on registration and submission of abstracts may be found on the BAMC website: http://mathsevents.cf.ac.uk/bamc2014/. Deadline for Early Bird registration is 1 March 2014. The colloquium is supported by an LMS Conference grant.

MATHEMATICAL LOGIC

A two-day conference celebrating Philip Welch's 60th birthday and his work in mathematical logic will take place on from 22 to 23 March 2014 at the University of Bristol. Confirmed speakers at the conference are:

- David Aspero (UEA)
- Volker Halbach (Oxford)
- Peter Koellner (Harvard)
- Peter Koepke (Bonn)
- Hannes Leitgeb (München)
- Menachem Magidor (Jerusalem)
- John Steel (Berkeley)
- Hugh Woodin (Harvard)

The meeting is supported by the Heilbronn Institute at Bristol, as a Heilbronn Day, by the School of Mathematics and the British Logic Colloquium. For further information visit the website at http://tinyurl.com/pa9szk6 or email Kentaro Fujimoto (kentaro.fujimoto@bristol.ac.uk).

YWFAW

The *Young Functional Analysts' Workshop* (YFAW) is an event aimed at early-stage researchers (postgraduates and postdocs) in functional analysis and related areas. The workshop has been running successfully for several years now, with previous meetings having been held in Leeds, Newcastle, York, Oxford and Sheffield. YFAW offers participants an opportunity both to present their own work in front of a sympathetic audience, and to get to know less familiar areas of current research in functional analysis through talks given by other young researchers as well as invited speakers. All participants are encouraged to take advantage of the friendly and welcoming environment and give a talk, but those who would prefer not to are equally welcome.

The **2014 Young Functional Analysts' Workshop** will be held at the University of Lancaster from 23 to 25 April 2014. The invited speakers are:

- Alexander Belton (Lancaster University)
- Mădălin Guţă (University of Nottingham)
- Piotr Koszmider (IMPAN, Warsaw)
- Ivan Todorov (Queen's University Belfast)
- András Zsák (Peterhouse, University of Cambridge)

Registration deadline is **18 March 2014**. To register and for further information visit the website at https://sites.google.com/site/yfawuk/ or email yfaw2014@gmail.com.

The workshop is supported by the Lancaster University Faculty of Science and Technology and an LMS Postgraduate Research Conference Scheme 8 grant.

PROBABILITY, ANALYSIS AND DYNAMICS
Bristol, UK, 23-25 April 2014

Speakers:

- Itai Benjamini (Rehovot)
- Paul Bourgade (Princeton / Cambridge)
- Hugo Duminil-Copin (Geneva)
- László Erdős* (Vienna)
- Haya Kaspi (Haifa)
- Konstantin Khanin (Toronto)
- Jean-Francois Le Gall (Paris)
- Ian Melbourne (Warwick)
- James Norris (Cambridge)
- Neil O'Connell (Warwick)
- Stefano Olla* (Paris)
- Gábor Pete (Budapest)
- Laure Saint-Raymond (Paris)
- Timo Seppäläinen (Madison-Wi)
- Domokos Szász (Budapest)
- Corinna Ulcigrai (Bristol)
- Péter Varjú (Cambridge)
- Bálint Virág (Toronto / Budapest)

*: to be confirmed

Organisers:

- Márton Balázs (Bristol)
- Edward Crane (Bristol)
- Nic Freeman (Bristol)
- Jens Marklof (Bristol)
- Bálint Tóth (Bristol / Budapest)

pad-organisers@bris.ac.uk

Homepage:
www.bris.ac.uk/pad14/
Registration:
www.survey.bris.ac.uk/mathematics/pad14

Supported by:

The Heilbronn Institute for Mathematical Research

Easter School "Dynamics and Analytic Number Theory"

LMS Northern Regional Meeting Followed by Series of Minicourses

Durham University, 31 March – 4 April 2014

We invite PhD students and researchers from both areas of analytic number theory and dynamics to attend the Easter School. This event will be a good opportunity to learn methods and to exchange ideas in these two areas.

Accommodation and meals will be provided.

Invited Speakers:

Tim Austin (Courant, NYU)
Yann Bugeaud (Strasbourg)
Manfred Einsiedler (ETH Zürich)
Giovanni Forni (Maryland)

Alex Kontorovich (Yale)
Sanju Velani (York)
Trevor Wooley (Bristol)

Organisers: D. Badziahin (Durham)   A. Ghosh (UEA)   A. Gorodnik (Bristol)
N. Peyerimhoff (Durham)   T. Ward (Durham)   B. Weiss (Tel Aviv)

More information and application procedure:
http://www.maths.dur.ac.uk/users/dzmitry.badziahin/2014_Easter_school/easter_index.html
E-mail: dzmitry.badziahin@durham.ac.uk

THE LONDON MATHEMATICAL SOCIETY JOINTLY WITH GRESHAM COLLEGE

Wednesday, 21 May 2014

6:00pm at The Museum of London

The Secret Mathematicians

Professor Marcus Du Sautoy, OBE

University of Oxford

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

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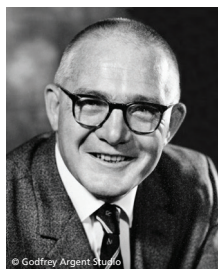
ADMISSION FREE

NO RESERVATIONS REQUIRED – FIRST COME, FIRST SERVED

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

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

OBITUARIES

DOUGLAS JONES

Professor Douglas Samuel Jones, FRS, FRSE, who was elected a member of the London Mathematical Society on 18 May 1979, died on 26 November 2013, aged 91.

© Godfrey Argent Studio

Brian Sleeman writes: Douglas Jones was born in Corby, Northants, on 10 January 1922. He won a scholarship to Wolverhampton Grammar School where he became Senior Prefect, Captain of both Chess and Cricket as well as Vice-Captain of Soccer. In 1940 Douglas won an open scholarship to Corpus Christi College, Oxford. As was the experience of many young men of that period Douglas's University career was interrupted by call up for war service. He joined the Royal Air Force and in 1942, as a Signals radar officer with the rank of Flight Lieutenant, led a research unit of about 100 people engaged in designing and commissioning new equipment for night fighter operations. In recognition of his abilities Douglas was 'Mentioned in Dispatches' in 1943 and awarded an MBE in 1945. In the same year he returned to Oxford graduating MA in 1947.

Following a year as a Commonwealth Fellow at MIT, Douglas was appointed to an assistant lectureship at Manchester University rising to Senior Lecturer in 1955. It was during this period that Douglas made fundamental contributions to diffraction theory and demonstrated his phenomenal abilities as an analyst. In 1957 he moved to the Chair of Mathematics at the University of Keele where his reputation as a world leader was established with the publication of his monumental book The Theory of Electromagnetism. In 1965 Douglas was appointed to the Ivory Chair of Applied Mathematics at the University of Dundee, a position he held with great distinction until his retirement in 1992, at which point he was made Emeritus Professor.

Douglas's style and approach to mathematical research is nicely encapsulated by the following remark of Sir James Lighthill relating to the theory of generalised functions made at the 1992 Dundee conference to mark his 70th birthday. It concerns Douglas's book The Theory of Generalised Functions.

"I have moreover been overjoyed that my tiny 80-page Introduction to Fourier Analysis and Generalised Functions, which concentrates on functions of just one variable, has proved to be a suitable appetite-whetting 'starter', as it were, leading up to Douglas's superbly concocted 'main dish' in 540 pages which extends all the results in a comprehensive fashion and includes the corresponding properties of functions of many variables."

During his career his achievements have been recognised by numerous honours; Fellowship of the Royal Society, Fellowship of the Royal Society of Edinburgh and Honorary DSc of the University of Strathclyde. He was also elected an Honorary Fellow of Corpus Christi College Oxford, recipient of the Naylor Prize and Lectureship in Applied Mathematics of the London Mathematical Society, the Marconi prize of the Institute of Electrical Engineers, the van der Pol Gold Medal of the International Union of Radio Science and the Keith Prize of the Royal Society of Edinburgh.

Douglas was a tireless champion and campaigner for the promotion of mathematics and that of the professional mathematician. He was chairman of the UGC (now HEFCE) mathematics sub-committee. Within the wider community Douglas was a founding member of the Institute of Mathematics and its Applications (IMA) served on Council and was appointed President in 1988. It was during his Presidency that he led the negotiations with the Privy Council which resulted in the IMA being incorporated by Royal Charter and then subsequently granted the right to award Chartered Math-

ematician status.

Douglas was a fine man, a friend and mentor and is greatly missed. He was predeceased by his wife Ivy and is survived by his sisters Dot and Joyce.

ANDRZEJ WOJCIECH ORCHEL

Dr Andrzej W. Orchel, who was elected a member of the London Mathematical Society on 22 November 1969, died on 22 January 2012, aged 65.

© Jack Orchel

Jack Orchel writes: Andrzej (Andrew) Orchel was born in Edinburgh on 16 January 1947. The second of four sons of Dr Eugeniusz and Rozalia Orchel (née Wasylkowska), he attended St Mary's RC College in Middlesbrough where his interest in projective geometry was ignited by his mathematics teacher Fred Jackson.

Andrew's undergraduate and postgraduate studies were pursued at Queen Elizabeth College in London from 1966 to 1972. There he was inspired by Dr Otto Wagner. Working alone for several years Andrew eventually produced a doctoral thesis entitled Finite Groups and Associated Mathematical Spaces in which he solved a challenging problem first proposed by Wagner in 1961, later associated with a conjecture of Marshall Hall. Andrew was awarded his PhD and elected a member of the London Mathematical Society in 1979. Unfortunately, he was burdened with a chronic debilitating illness which had become apparent in his early twenties. This interfered with his advanced studies and prevented him from pursuing an academic career.

Writing in December 1983 Professor W.B. Bonnor of Queen Elizabeth College, London, stated that whilst at QEC Andrew 'was a brilliant student, especially on the pure mathematical side, and his (under-

graduate) marks in Galois theory still rank among the best we have ever had...When he left the college (in 1972) he continued his researches and, in spite of serious ill health which necessitated several operations, he was awarded the PhD of London University...' Professor Bonnor also described Andrew as a 'friendly, kindly man, with a strong sense of humour' and 'many other excellent qualities, among them persistence, determination and courage.'

Andrew worked briefly for ICI on Teesside but was forced to lead a reclusive lifestyle at the family home in Linthorpe where he was happiest. He was a keen student of nature, a talented amateur photographer and artist and read widely. He devoted much time to studying P shapes and delighted in making discoveries in this field. His legacy lies in his huge archive of photographs and diaries which documents the life of the Orchel family. He died suddenly of a heart attack on 22 January 2012 a few days after his 65th birthday.

REVIEWS

DO I COUNT? STORIES FROM MATHEMATICS by Günter M. Ziegler, CRC Press, 2013, pp 226 pp, £18.99, ISBN: 978-1-4665-6491-6.

It seems to me that in recent years there has been a marked growth in the number of popular mathematics books aimed at enlightening the general reader as to what mathematics is and what mathematicians actually do. Is this because mathematicians are getting fed up with the glazed eyes staring back at them when they answer the question 'what do you do?' or with the countless stories of peoples' inability to do basic arithmetic? Having recently read
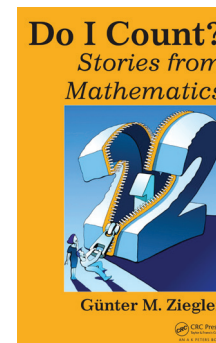
other books on this theme by British and American mathematicians, I found that this one from a German mathematician only emphasises that this non-understanding of the nature of mathematics is not just confined to the UK and USA.

Do I Count? is packed full of thought-provoking stories exploring the concept and purpose of numbers. Many familiar tales of mathematical discoveries are told, interlaced with interesting research involving mathematics. As a result the book includes several stories from the history of mathematics; the presentation of which I doubt would satisfy historians of mathematics. However, this is not necessarily a problem, as these elements are obviously included to engage the reader and to show how mathematics has been discovered over the centuries rather than as history.

Back in 2007 I was particularly struck by a talk from Judith Grabiner at an event for the British Society for the History of Mathematics. She said that whereas science is taught from a historical perspective, in that we all know what the likes of Boyle and Hooke discovered and the contribution that they made to the subject, in contrast mathematics is presented to learners as a set body of knowledge. This means that children grow up not realising that mathematics has similarly been discovered and was not "always there", and that therefore that there is still more mathematics out there waiting to be revealed.

Ziegler seeks to remedy this misconception. Many historical mathematicians are mentioned such as Euler, Gauss, Fermat, Germain, Gödel and Hardy as well as contemporary mathematicians such as Wiles, Perelman and Tao. Alongside the history there are examples of mathematical problems that have recently been solved and others that are currently being worked on. This all gives the reader an insight into the variety of mathematics that there is out there. Much of this is explained in a chapter on puzzles which starts with Sudoku and ends with a discussion on the seven Millennium Problems.

I found the final two chapters particularly interesting. In the penultimate chapter Ziegler discusses the popular misconception that mathematics is done by "old, white-haired, middle-class men who … lack social skills"; acknowledging that this perception is not a great advert for students to go on and study mathematics beyond school. However he gives plenty of examples, both past and present, showing this is not usually the case. In the final chapter Ziegler acknowledges that mathematics is difficult; making no apology for this, he uses it as a challenge to invite the brightest young minds to pick up the baton and get involved.

A slight concern is that I am not convinced that Do I Count? translates well. This is not a criticism of author or translator, but merely an observation of cultural differences. Ziegler himself says that Germans do not understand the British sense of humour and I wonder if the same can be said the other way around.

I think this book will appeal less to mathematicians than to lay people who want to read stimulating stories about numbers and find out more about what mathematics really is and what mathematicians do. Personally I was slightly irritated by the way the book jumped around. For example the question of how many prime numbers there are is raised in the first chapter. This is followed by the second chapter totally devoted to primes. In my mind this chapter is crying out for the proof that there are infinitely many primes but this does not come until much later—in chapter seven, a chapter devoted to proofs.

Having said that I do not think this this is something that the general reader is likely to be concerned about. Far more interesting to them will be the commentary on recent newspaper stories such as whether bees and chickens can count, popular mathematics puzzles and the problems of putting real-life situations into equations.

Noel-Ann Bradshaw
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THE LOGICIAN AND THE ENGINEER: HOW GEORGE BOOLE AND CLAUDE SHANNON CREATED THE INFORMATION AGE by Paul J. Nahin, Princeton University Press, 2012, 248 pp, £16.95, ISBN 978-0-691-15100-7.

At first glance, George Boole and Claude Shannon seem to be an odd pairing for the subject of a book. Boole, the son of a Lincoln cobbler, was largely self-taught; he never attended university, but rose through his own ability from a background of humble school-teaching to a chair at Cork. In 1854 he published An investigation into the Laws of Thought, using the algebraic system now named after him to apply symbolic methods to logic. The author also of influential textbooks on differential and difference equations, and many research papers, he died aged 49, at the height of his powers, from a fever induced by lecturing in rain-sodden clothes. Shannon had a much more favourable start in life. The son of a businessman and probate judge, and of a language teacher, he obtained degrees in mathematics and electrical engineering at the University of Michigan, and a PhD in mathematical genetics at MIT. After war work on cryptography, in 1948 he published his paper A Mathematical Theory of Communication. This masterpiece of originality and exposition essentially created Information Theory, providing a mathematical framework for the codes which allow communication systems and computers to transmit and store information efficiently and accurately. Shannon lived to the age of 84, but his last years were clouded by Alzheimer's disease.

Boole and Shannon were very different characters. Boole was high-minded but unworldly, a deeply religious Unitarian who published lectures on such topics as the correct use of leisure. Shannon was an atheist, who loved juggling while riding a unicycle along the corridors of Bell Labs; he invented ingenious and often eccentric electrical devices, including a maze-solving mouse and a calculator based on Roman numerals, and he made money by applying mathematical techniques to the casinos and the stock exchange. He had a brief first marriage to Norma Levor, who later became the blacklisted Hollywood screen-writer Norma Barzman.

The link between them is Shannon's MSc dissertation, written in 1937 at MIT, and often called the most important masters dissertation ever written. In it, drawing on his experience of working on Vannevar Bush's differential analyzer (a powerful analogue computer), he used propositional calculus to convert electrical circuit design from an ad hoc art into a systematic science. The methods he introduced soon become fundamental tools in the newly-developing fields of electronics and computer science, so he and Boole can be regarded as founding fathers of modern digital communications.

This book devotes 11 pages each to summarizing the life and work of Boole and Shannon. There is little hint of engagement with primary sources, and for a more comprehensive discussion of Boole, Des McHale's biography is recommended. There seems to be no full biography of Shannon, though his collected papers, edited by Sloane and Wyner, contain a useful brief biography, profile and bibliography.

Nahin has a lively and forthright style, though this sometimes strays into tetchiness, for instance with a gratuitous sneer at the late Steve Jobs. The footnotes which
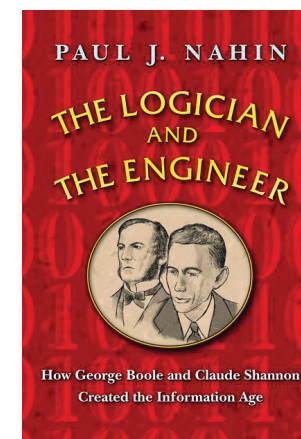
end each chapter often contain interesting and useful digressions, though there is a tendency to rely too often on reminiscences from the author's career and references to his other books.

The background required to read this book is 'high school algebra', including matrix multiplication, together with some basic circuit theory outlined in an appendix. Nahim adopts the interesting strategy of summarising a paper by Shannon and Hagelbarger on the concavity of resistance functions in Chapter 1, as a test of the reader's ability to cope with the rest of the book. Most of his explanations of mathematics and electrical engineering are at a suitably gentle level, though a remark about 'the well-known formula for the solutions to a cubic' is surely over-ambitious.

This book has been rather carelessly edited, with important names such as Noble, Peirce and Thorp misspelt. A more serious criticism concerns Nahim's treatment of channel capacity, a fundamental concept which measures the extent to which a channel can transmit information accurately. He defines it for a noiseless channel, in which symbols are transmitted without error, as the limit of a certain sequence; however, he then discusses the importance of channel capacity in the context of Shannon's Theorem for a noisy channel, where transmission errors can occur and a totally different definition, involving conditional entropy functions and mutual information, is required. There is no explanation for this simplification, and the unwary reader could obtain quite the wrong impression about the nature of channel capacity.

Despite these criticisms, this is a useful and often interesting introduction to the life and work of two intellectual giants who are largely unknown to the general public.
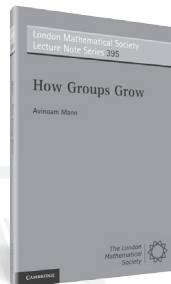
Gareth and Mary Jones
University of Soutampton

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.

FEBRUARY 2014

6–7 London Stringology Days and London Algorithmic Workshop, King's College London (432)

10–21 Higher Structures in Algebraic Analysis Winter School and Workshop, Padova, Italy (428)

12–14 Recent Advances in Nonlinear PDE and Calculus of Variations Workshop, Reading (432)

15 Tomorrow's Mathematicians Today Conference, University of Surrey (432)

24–28 Foams and Minimal Surfaces—12 Years On, INI Workshop, Cambridge (429)

28 Mary Cartwright Lecture, York (433)

MARCH 2014

22–23 Mathematical Logic, Bristol (433)

31 LMS Northern Regional Meeting, Durham (433)

31–3 Apr Aspects of Random Walks, Durham University (432)

APRIL 2014

1–5 Ischia Group Theory 2014, Naples, Italy

2–4 Distinguished Lecture Series 2014, Heilbronn Institute, Bristol

7–10 British Mathematical Colloquium, Queen Mary, University of London (433)

8 LMS Meeting at the BMC, Queen Mary, University of London (433)

16 Joint Society Meeting with the Royal Meteorological Society, Imperial College London (433)

14–17 Kent Spectral Theory Meeting, Canterbury (433)

14–17 LMS Invited Lecturer 2014, University of East Anglia (433)

23–25 Probability, Analysis and Dynamics, Bristol (433)

23–25 Young Functional Analysts' Workshop, Lancaster University (433)

25 Women in Mathematics Day, London (433)

28–30 BAMC 2014, Cardiff University (433)

28–1 May Probability and Statistics Research Students Conference, Nottingham (431)

MAY 2014

15–17 Norrie Everitt Memorial Meeting, Cardiff (432)

21 LMS-Gresham College Joint Meeting, London (433)

JUNE 2014

30–5 Jul Building Bridges, LMS-CMI Research School, Bristol (433)

JULY 2014

13–15 Modelling in Industrial Maintenance and Reliability IMA Conference, Oxford

23–25 ISSAC 2014 Kobe University, Japan

AUGUST 2014

12 & 14 International Congress for Women in Mathematics 2014, Seoul, Republic of Korea (433)

13–21 ICM 2014, Seoul, Republic of Korea (427)

17–19 Mathematical Cultures Conference, De Morgan House, London (417)

SEPTEMBER 2014

3–5 Jordan Geometric Analysis and Applications, Queen Mary, University of London (432)

3–5 Operator Theory Workshop, Queen's University, Belfast

MARCH 2015

30–2 April Joint Meeting of the BMC and BAMC, Cambridge

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UK Harmonic Analysis and PDE Research Network Meeting
held at the University of Birmingham on 20 November 2013
(report on page 7)

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LMS South West and South Wales Regional Meeting
held at Swansea University on 16 December 2013
(report on pages 8 & 9)