

LONDON MATHEMATICAL SOCIETY

NEWSLETTER

No. 423 March 2013

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NEWSLETTER ONLINE: newsletter.lms.ac.uk

MATHEMATICS OF PLANET EARTH 2013

The London Mathematical Society is a Mathematics Planet Earth 2013 Partner (http:// mpe2013.org/). The LMS sponsored the 6ECM MPE Plenary Lecture: A Challenge & an Opportunity to Mathematicians given by José Francisco Rodrigues (Lisbon). This conference on Non-equilibrium Statistical Mechanics received an LMS grant.

Non-Equilibrium Statistical Mechanics and the Theory of Extreme Events in Earth Science

Report

From 8 to 11 January 2013 the conference Non-equilibrium Statistical Mechanics and the Theory of Extreme Events in Earth Science took place at the University of Reading. The conference was part of the international initiative Mathematics for Planet Earth 2013. supported by mathematical societies and institutes around the world. The conference had a very interdisciplinary character and brought together scientists working across boundaries in various fields of mathematics, physics, and earth science,



with presentations on extreme value theory and dynamical systems (Mark Holland, Mark Pollicott, Ana Moreira-Freitas, Jorge Freitas, Sandro Vaienti, Valerio Lucarini), large deviations theorv. fluctuations theorems, and thermodynamics (Freddy Bouchet, Christian Beck, Davide Gabrielli, Rosemary Harris, Matteo Colangeli, Giovanni Gallavotti, Guido Gentile), and nonlinear and statistical geophysics (Roberto Deidda, Holger Kantz, Michael Ghil, Juergen Kurths, Antonio Speranza).

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The programme covered subjects dealing with statistical problems in hydrology, the general role of the chaotic hypothesis, the relationship between extreme values and return times, the role of superstatistics, the complexity of the physics of climate science, the interconnection and the network of climate events and extreme events in climate science from theory to quantitative methods, and many more. Lively discussions and exchanges emerged, going in the direction of establishing further scientific collaborations and project proposals. Several young researchers contributed to the

The conference is part of chain of further events which culminate in the two month long (21 October - 20 December 2013) research programme Mathematics for the Fluid Earth (www.newton.ac.uk/programmes/ MFE/index.html) to be held at the Isaac Newton Institute (Cambridge). The programme and abstracts of all talks are available at the conference webpage www.reading.ac.uk/ maths-and-stats/news/NeSEE-conference. aspx. Furthermore, for some presentations, further material is available in the form of slides. The organisers would like to thank the participants for their interest and their active engagement, which made this conference a success, and would like to thank the London Mathematical Society and the ERC Starting Investigator Grant NAMASTE - Thermodynamics of the Climate System (Grant Agreement No. 257106) for generously supporting the event.

RESEARCH

LMS responds to open access inquiries

The LMS has responded to a call from the House of Lords Science and Technology Committee. The LMS response is available at http://tinyurl.com/a4wexye.

The LMS has also responded to a call for written evidence on open access from the Business, Innovation and Skills Select Committee. The LMS response will be available in due course.

Response to request for inquiry topics

The Council for the Mathematical Sciences (CMS) was asked by the House of Lords Science and Technology Committee to provide a list of possible inquiry topics to be considered by the Committee. A letter outlining the CMS suggestions is available at http://tinyurl.com/ a2c3fu3. The LMS wrote a separate letter of support, which is available at http://tinyurl. com/a7r8hlh.

LMS Newsletter

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http://newsletter.lms.ac.uk

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EPSRC to issue call for new Centres for Doctoral Training (CDTs)

One of the UK's largest investments in training for the engineering and physical sciences has been announced by Minister for Universities and Science, David Willetts. Speaking at the think tank Policy Exchange, Mr Willetts announced that £350 million was to be issued by the Engineering and Physical Sciences Research Council (EPSRC) in February 2013. More information is available at http://tinyurl.com/a3e32bw.

Latest data on universities' REF submission intentions

UK higher education institutions (HEIs) plan to submit the work of a slightly increased number of their staff for assessment in the 2014 Research Excellence Framework (REF), compared to the previous Research Assessment Exercise (RAE) in 2008.

Figures collected by the HE funding bodies show that UK HEIs plan to submit the research of 54,269 academic staff for assessment in the REF, compared to 52,401 in RAE 2008 – an increase of 3.6 per cent. More information is available at http://tinyurl.com/aqkmnrb.

RCUK announces policy to support equality and diversity in research

Research Councils UK (RCUK) unveiled its new *Statement of Expectations for Equality and Diversity* in January. This statement is intended to drive more rapid cultural change in the management of equality and diversity in institutions receiving Research Council funding. The full statement is available at http://tinyurl.com/b7cgdrl.

HIGHER EDUCATION

Funding for higher education in England for 2013-14

The Secretary of State for Business, Innovation and Skills (BIS) and the Minister for Universities and Science have confirmed funding allocations to HEFCE for 2013-14 and the government's priorities for the Council for the coming year.

The grant letter sets out government funding and priorities for HEFCE and for higher education for the second year of the new financial arrangements for higher education in England. More information is available at http://tinyurl. com/b9mqscv.

SCHOOLS AND COLLEGES

A-level reform

The Secretary of State for Education, Michael Gove has written to Ofqual, the independent regulator of qualifications, examinations and assessments, to outline future changes to A-level structure, including the development of new AS levels as a standalone qualification. The Secretary of State also confirmed plans for leading universities to be more closely involved in developing the content of new A-levels, starting with those subjects which are most commonly required for undergraduate study.

The first of the new A-levels will be introduced for teaching in schools from September 2015. You can read more information about future changes to A-levels at http://tinyurl.com/bcr9yuh.

Curriculum, exam and accountability reform

Michael Gove, Secretary of State for Education has announced that the government is to abandon plans to replace GCSEs in key subjects in England with the English Baccalaureate Certificates (EBCs) and instead will reforn exisitng GCSEs.

'The qualifications should be linear, with all assessments normally taken at the end of the course. Examinations will test extended writing in subjects such as English and history, have fewer bite-sized and overly structured questions, and in mathematics and science there should be a greater emphasis on quantitative problem-solving. The new GCSEs in the core academic subjects of English, maths, the sciences, history and geography will be ready for teaching in 2015'.

The full transcript of Gove's announcement to the House of Common is available at http://www.education. gov.uk/inthenews/inthenews/a00221416/ curriculum,-exam-and-accountability-reform

Elizabeth Truss speaks about the importance of mathematics

The Education Minister spoke recently at an education conference in the north of England. The full transcript of her address is available at http:// tinyurl.com/bbjkfuy.

New qualification needed to improve England's poor participation in mathematics post-16

The solution to England's poor participation rate in post-16 mathematics education could lie in a new gualification that provides a clear and attractive alternative for students who don't currently go on to study AS or A-level mathematics, according to a comparative study of mathematics education in seven countries, published by the Nuffield Foundation. The full report is available at http://tinyurl.com/bbsfta3.

Confusion in the Ranks: How good are England's Schools?

Big variations in England's education rankings in global league tables can be misleading and should be treated with caution, the Sutton Trust has said as it published a new report - Confusion in the Ranks: How Good are England's Schools – explaining apparent inconsistencies in international rankings.

The latest OECD PISA league tables place England equal 23rd in reading, equal 27th in mathematics and 16th in science out of 65 countries, whereas a recent global index prepared for Pearson by the Economist Intelligence Unit placed England 6th of 40 countries. The full report is available at http://tinyurl.com/ aidk8v6.

> Dr John Johnston Mathematics Promotion Unit EPSRC

LMS LIBRARY AT UCL

Registering, Renewing and 24 Hour Opening

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

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

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.
- Access journal articles from designated UCL Explore terminals and download articles onto USB sticks for personal use only.
- 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 use of the Library at UCL does not include remote electronic access to journals and articles.

To Register/Renew (in person)

Please complete the application form (which Members of the Society are reminded that can be downloaded from www.ucl.ac.uk/Library/borrowing.pdf) and bring the following items with you:

- passport-size photograph
- proof of Identity e.g. passport, photocard driving licence
- proof of Address e.g. utility bill, recent bank statement, valid photocard driving licence.
- proof of membership a letter of confirmation can be obtained from the Society, please email membership@lms.ac.uk

To Register/Renew (by post)

To register by post, please complete the application form (which can be downloaded from www.ucl.ac.uk/Library/borrowing.pdf) and return it with:

- a passport-size photograph
- proof of membership a letter of confirmation can be obtained from the Society, please email membership@lms.ac.uk

To: Head of Membership, UCL Library Services, University College London, Gower Street, London WC1E 6BT. Tel: 020 7679 7953, Fax: 020 7679 7373, Email: lib-membership@ucl.ac.uk.

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

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 09:00	Open from 08:45
Tuesday	09:30 - 20:45	24 hour opening	24 hour opening
Wednesday	09:30 - 20:45	24 hour opening	24 ho <mark>ur opening</mark>
Thursday	09:30 - 20:45	24 hour opening	24 hou <mark>r open</mark> ing
Friday	10:00 - 20:45	24 hour opening	24 hour <mark>openin</mark> g
Saturday	11:00 - 17:45	Close at 20:45	Close at 21 <mark>:00</mark>
Sunday	Closed	11:00 - 20:45	11:00 - 21:00 (holders of UCL Library Cards only)

Please note:

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

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

LONDON MATHEMATICAL SOCIETY NORTHERN REGIONAL MEETING

Monday 18 March 2013

Herschel Building, Newcastle University

Programme:

2.00 pm Opening of the meeting

Volodymyr Mazorchuk (Uppsala)

3.15 pm Ivan Smith (Cambridge)

- 4.30 pm Tea/Coffee
- 5.15 pm Bernhard Keller (Paris 7)
- 6.30 pm Reception and Buffet at The Penthouse

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

To register, please visit www.mas.ncl.ac.uk/triangulations/index.php?p=6. Registration closes on **31 January 2013**.

The Society Meeting forms part of the workshop on *Triangulations and Mutations* from 18-22 March. For further details visit: www.mas.ncl.ac.uk/ triangulations/index.php?p=6.

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 (peter.jorgensen@ncl.ac.uk).

SPITALFIELDS DAY

Call for proposals

The London Mathematical Society is pleased to offer grants of **up to £500** to-wards the cost of a Spitalfields Day.

A Spitalfields Day is a one-day event at which selected participants, often eminent experts form overseas, give survey lectures or talks, which are accessible to a general mathematical audience. The Spitalfields Day is often associated with a long-term symposium and speakers will generally give lectures on topics of the symposium.

The name honours the Society's predecessor, the Spitalfields Mathematical Society, which flourished from 1717 to 1845, and Spitalfields Days have been held each year since 1987.

The grant of £500 is intended to cover actual supplementary costs for the event, e.g. subsidising the cost for a lunch for participants, and for small travel grants of £50 to enable LMS members and research students to attend the event.

If any member is interested in organizing a Spitalfields Day, please write to Dr R.A. Wilson, Programme Secretary, at the Society (grants@lms.ac.uk). The format need not be precisely as described, but should be in a similar spirit.

CLAY RESEARCH FELLOWS 2013

The Clay Mathematics Institute is pleased to announce that **Semyon Dyatlov** and **Aaron Pixton** have been appointed Clay Research Fellows.

Semyon Dyatlov will receive his PhD in 2013 from the University of California, Berkeley under the supervision of Maciej Zworski. He applies the methods of microlocal analysis and dynamical systems to problems in scattering theory, quantum chaos, and mathematical general relativity. Semyon received his BSc from Novosibirsk State University in 2008. He will be a member of MSRI in Fall 2013 and move to MIT in 2014. Semyon will begin his five-year fellowship on 1 July 2013.

Aaron Pixton will receive his PhD in 2013 from Princeton University under the supervision of Rahul Pandharipande. His research is in enumerative algebraic geometry. The topics he has worked on recently include the tautological ring of the moduli space of curves, moduli spaces of sheaves on 3-folds, and Gromov-Witten theory. Aaron will begin his five-year fellowship on 1 September 2013.

For more information visit www.claymath.org/research_fellows.

MATHEMATICS OF PLANET EARTH

Mathematics 2013 is the eighth in the series of annual IMA conferences to promote mathematics. This series aims to demonstrate to both mathematicians and non mathematicians the many uses of modern mathematics. The 2013 conference focusses on the *Mathematics of Planet Earth*, including talks on climate, education, energy and demography. The conference will take place on Thursday 14 March 2013 at Mary Ward House, London. The speakers are:

- Ellen Brookes Pollock and Ken Eames Swine flu AND epidemic modelling
- Valerio Lucarini Climate dynamics
- Nick Watkins Bunched black swans and the British Antarctic Survey
- Rosalind Mist Mathematics education globally
- David Ogle Mathematics and energy world wide
- Richard Pinch *Global security*
- Chris Daykin Demography world wide and the actuarial response
- IMA President *IMA in 2013: Where we are*

The conference will be followed by a reception. For further information and to register visit the website at www.ima. org.uk/conferences/conferences_calendar/ ima_mathematics_2013.cfm or contact Lizzi Lake at conferences@ima.org.uk. http://newsletter.lms.ac.uk

TOM KIBBLE'S 80TH BIRTHDAY

A meeting to celebrate Professor Tom Kibble's 80th birthday will take place on 13 March 2013 at Imperial College London. Over his career Tom has made enormous contributions to our understanding of the mathematics of symmetry within fundamental physical theory. His understanding of the mechanism of mass generation via symmetry breaking in Yang-Mills theories in his key papers of 1964 and 1967 provided the foundations for the Standard Model and the prediction of the Higgs boson. Tom has also made very significant contributions to the study of the dynamics of symmetry breaking near phase transitions with diverse applications including to structure formation in the universe and to vortices in Helium-3. The speakers are:

- Steven Weinberg (U Texas, Austin)
- Neil Turok (Perimeter Institute)

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- Wojciech Zurek (Los Alamos)
- Jim Virdee (Imperial College London)

The principal organiser is Jerome Gauntlett. For further information visit the website at http://plato.tp.ph.ic.ac.uk/conferences/Kibble80/index.html or contact Graziela De Nadai-Sowrey (g.denadai@imperial.ac.uk). The meeting is supported by an LMS Conference grant.

ICFT MEETING

ICFT2013, the 17th annual UK meeting on Integrable Models, Conformal Field Theory and Related Topics, will be held from 12 to13 April 2013 at the University of Hertfordshire. Speakers include:

- Andy Hone (University of Kent)
- Claude Duhr (ETH, Zürich)
- Bogdan Stefanski (City University, London)

Some slots for speakers remain open. Registration deadline is **12 March 2013**. Full details can be found at www.extragalactic. info/~cyoung/icft. The meeting is supported by an LMS Conference grant and the Institute of Physics, Mathematical and Theoretical Physics Theory Group.

QOP

A link has been established between groups in Lancaster, Leeds and IMPAN (the Mathematical Institute of the Polish Academy of Sciences in Warsaw), under the aegis of a London Mathematical Society Scheme 3 grant. The overall organizer is H.G. Dales (Lancaster).

The title of the link is QOP, which stands for Quantum groups, operators, and non-commutative probability. The topics to be covered include: quantum groups, quantum harmonic analysis, Banach algebras, Banach spaces and operators, stochastic analysis and non-commutative probability, and set-theoretic analysis. There will be three meetings of the QOP network during the calendar year 2013; each meeting will have a theme related to the above list.

- Lancaster, 29-30 April 2013, inaugural meeting with the theme Operator spaces and operators on Banach spaces, the main external speakers will be David Belcher (Houston) and Gilles Gaudery (Paris).
- IMPAN, Warsaw, 8-12 July 2013, second meeting with the theme Banach algebras and C*-algebras
- Leeds, within the week 15-21 September 2013, third meeting with the theme Quantum (semi)groups and (co)actions

All are welcome to attend. There is also a list of the main participants and a collection of relevant papers on the site. For further details of the meetings visit the website www.maths. lancs.ac.uk/qop/index.html.

OPERATOR ALGEBRA DAY

An Operator Algebra Day will be held on 13 May 2013 at the University of Aberdeen. The first talk will start at 12 noon and the last talk will finish at 5:45 pm, followed by dinner. The speakers are:

- Astrid an Huef (Otago)
- David Blecher (Houston)
- Andrew Hawkins (Glasgow)
- Christian Voigt (Glasgow)
- John Wright (Aberdeen)

For more information email Rob Archbold (r.archbold@abdn.ac.uk).

HIGHER STRUCTURES IN TOPOLOGY AND NUMBER THEORY

The Clay Mathematics Institute will hold a two-day workshop on *Higher Structures in Topology and Number Theory* at the Mathematical Institute of the University of Oxford from 15 to 16 April 2013. The event is a satellite of the *Grothendieck-Teichmüller Groups, Deformations and Operads* programme taking place at the Isaac Newton Institute in Cambridge between January and April 2013.

The main goal of the workshop is to bring together research communities working on realizations of higher algebraic structures in number theory and topology as well as geometry and mathematical physics. The invited speakers include:

• Ed Frenkel (University of California at Berkeley) tbc

- Hidekazu Furusho (University of Nagoya)
- Ezra Getzler (Northwestern University)
- Jeff Giansiracusa (Swansea University)
- André Henriques (Universiteit Utrecht)
- Don Zagier (Max Planck Institute for Mathematics)

Registration is free but to enable estimation of numbers, participants are asked to register in advance. For more information visit the website at www.claymath.org/ workshops/TNT.

Limited accommodation is available. Limited funding may be available for graduate students and early career researchers wishing to attend. Students requesting funding should do so through their supervisors. Requests for accommodation and support may be addressed to Naomi Kraker (admin@claymath.org).

The organisers are Minhyong Kim (University of Oxford), Ulrike Tillmann (University of Oxford) and Bruno Vallette (University of Nice).

LONDON MATHEMATICAL SOCIETY Meeting at BMC



26 March 2013 11.30 am University of Sheffield

Mikhail Kapranov (Yale) Higher Segal Spaces

The British Mathematical Colloquium will take place at the School of Mathematics and Statistics in the University of Sheffield, 25-28 March 2013. The first talk will start at 16:00 on Monday 25 March and the last will end at 12:30 on Thursday 28 March 2013.

To register, please visit: http://maths.dept.shef.ac.uk/maths/bmc2013/register.php.

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



LMS-EPSRC Short Course Common Themes in Financial & Actuarial Mathematics Liverpool 15-19 April 2013

Organisers: O. Menoukeu-Pamen and D. Šiška

Course outline

The course will introduce students to derivative modelling with counterparty risk and life insurance modelling with particular focus on using advanced interest rate models. Having completed the course, participants should be familiar with basics of derivatives pricing including counterparty risk as well as life insurance modelling using advanced interest rate models.

The broad field of the course should appeal to students and postdoctoral researcher in financial and actuarial mathematics as well as researchers and students in probability theory, stochastic analysis, stochastic control theory or partial differential equations that are interested in applications of their respective, more theoretical, subjects. The course may also be of interest to practitioners in the financial and insurance industry.

The two main lecture course topics are:

· Counterparty risk and models of default time (Monique Jeanblanc, Université d'Evry)

Life insurance and long term interest rate modelling (Nicole El Karoui, Ecole Polytechnique)

There will be guest lectures by **Francesca Biagini** (Ludwig-Maximilians-Universität, München), José Manuel Corcuera Valverde (Universitat de Barcelona), Goran Peskir (University of Manchester), Marek Musiela (Man institute of Quantitative Finance, Oxford), Henrik Hult (KTH Royal Institute of Technology, Stockholm)

These lecture courses will be supplemented by tutorial sessions.

For further information please visit: http://www.liv.ac.uk/sslam2013

Applications: Applications should be made using the registration form available via the Society's website at: http://www.lms.ac.uk/events/forthcoming-short-courses.

Research students, post-docs and those working in industry are invited to apply.

The closing date for applications is **Monday 18 March**. Numbers will be limited and those interested are advised to make an early application.

All applicants will be contacted within one week after the deadline; information about individual applications will not be available before then. In the event of over-subscription preference will be given to UK-based research students

Fees

For details of the registration fee and subsistence costs, please visit the Society's website: http://www.lms.ac.uk/events/forthcoming-short-courses

Fees are not payable until a place on the course is offered but will be due by 8 April 2013.

All participants must pay their own travel costs (for EPSRC funded students, this should be covered by their DTA).

LMS-EFSRC Short Courses aim to provide training for postgraduate students in core areas of mathematics. Part of their success is the opportunity for students to meet other students working in related areas as well as the chance to meet a number of loading appendix in the topic.



LMS-EPSRC Short Course



O-Minimality and Diophantine Geometry

Manchester University 8-12 July 2013

Organisers: Gareth Jones and Alex Wilkie

Course outline

The last five years have seen a surprising and fruitful interaction between o-minimality, a branch of model theory, and diophantine geometry. The most spectacular outcome of this interaction is Pila's proof of the André-Oort conjecture for products of modular curves (Annals of Math., 2011). There have been further important developments by several mathematicians including Masser, Zannier, Ullmo, Yafaev, Habegger, and Pila.

The aim of the LMS-EPSRC Short Course is to introduce students in both model theory and number theory to these recent developments. The strategy underlying the diophantine applications will be introduced through a simple example accessible to first-year graduate students, and the key ingredients will each be discussed.

The three main lecture course topics are:

· Rational points on definable sets (Alex Wilkie, Manchester)

- Functional transcendence via o-minimality (Jonathan Pila, Oxford)
- Diophantine applications (Philipp Habegger, Frankfurt)

There will be guest lectures given by David Masser (Basel), Andrei Yafaev (UCL) and Gareth Jones (Manchester).

These lecture courses will be supplemented by tutorial sessions.

Applications: Applications should be made using the registration form available via the Society's website at: <u>www.lms.ac.uk/content/short-instructional-courses</u>. Research students, post-docs and those working in industry are invited to apply.

The closing date for applications is **Monday 27 May 2013**. 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*

In the event of over-subscription preference will be given to UK-based research students

Fees

All research students registered at a UK university will be charged a registration fee of £100. There will be no charge for subsistence costs.

UK-based postdocs will be charged a registration fee of £250, plus half the subsistence costs (£150) £400 in total.

All others (overseas students and postdocs, those working in industry) will be charged a registration fee of £250 plus the full subsistence costs (£300) £550 in total.

All participants must pay their own travel costs (for EPSRC funded students, this should be covered by their DTA). Fees are not payable until a place on the course is offered but will be due by Friday 28 June.

LMS-EPSRC Short Courses aim to provide training for postgraduate students in core areas of mathematics. Part of their success is the opportunity for students to meet other students working in related areas as well as the chance to meet a number of loading experts in the topic.

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LONDON MATHEMATICAL SOCIETY MIDLANDS REGIONAL MEETING

Tuesday 11 June 2013

University of Leicester

Programme:

Opening of the Meeting

Speakers:

Franz Pedit (Massachusetts) Frances Kirwan (Oxford) Peter Topping (Warwick)

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Wine 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, please contact the organisers: (k.leschke@le.ac.uk). The cost of the dinner is to be confirmed, and will include drinks.

The meeting forms part of a workshop on *Advances in Surface Theory* from 12 to 14 June. For further details, please contact the organiser (k.leschke@ le.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.





Computational Group Theory

LMS-EPSRC Short Course

University of St. Andrews 29 July – 2 August 2013

Organisers: Alexander Konovalov, John McDermott, Angela Miguel & Max Neunhöffer

Course outline

The course will introduce students to the four main areas of Computational Group Theory: permutation groups, soluble and p-groups, matrix groups and finitely presented groups. The course will cover typical problems and standard algorithms, along with the analysis of these algorithms and their practical use on a computer. In the practical sessions there will be some emphasis on using the computer algebra system GAP, a world wide open source project established in 1988. After this course the participants will have a good understanding of what computers can and cannot do with groups and will be able to use GAP to answer their own group theoretic questions. The course aims to appeal to a broad spectrum of students from areas such as Algebra, Topology, Combinatorics and Graph Theory.

The four main lecture course topics are:

- Permutation Groups (Alexander Hulpke, Colorado State University)
- · Soluble Groups and p-Groups (Bettina Eick, Technische Universität Braunschweig)
- Matrix Groups/Constructive Recognition (Derek Holt, University of Warwick)
- Finitely Presented Groups (Max Neunhöffer, University of St Andrews)
- These lecture courses will be supplemented by tutorial sessions.

For further information please visit: http://www-circa.mcs.st-andrews.ac.uk/cgt2013

Applications: Applications should be made using the registration form available via the Society's website at: <u>www.lms.ac.uk/content/short-instructional-courses</u>. Research students, post-docs and those working in industry are invited to apply.

The closing date for applications is **Monday 17 June 2013.** 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

In the event of over-subscription preference will be given to UK-based research students

Fees

All research students registered at a UK university will be charged a registration fee of £100. There will be no charge for subsistence costs.

UK-based postdocs will be charged a registration fee of £250, plus half the subsistence costs (£125) £375 in total.

All others (overseas students and postdocs, those working in industry) will be charged a registration fee of £250 plus the full subsistence costs (£250) £500 in total.

All participants must pay their own travel costs (for EPSRC funded students, this should be covered by their DTA). Fees are not payable until a place on the course is offered but will be due by Friday 19 July.

LMS-EPSRC Short Courses aim to provide training for postgraduate students in cure areas of mathematics. Part of their success is the opportunity for students to meet other students working in related areas as well as the chance to meet a number of loading experts in the topic.





THE LONDON MATHEMATICAL SOCIETY JOINTLY WITH GRESHAM COLLEGE

Tuesday 14th May 2013

6:00 pm at The Museum of London

Mathematics: The Next Generation

Professor Peter Cameron

Queen Mary, University of London

Mathematics is important to us all. So it is important to enable young mathematicians, clear-thinking and passionate about their subject, to contribute at the highest level. Professor Cameron will talk about his experience designing and presenting a course for firstsemester university students aiming to produce mathematicians.

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

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LINS Advancing Mathematics London Mathematical Society

Modern Nonlinear PDE Methods in Fluid Dynamics

LMS-EPSRC Short Course University of Reading 8-12 July 2013

Organisers: Beatrice Pelloni & Eugen Varvaruca

Course outline

The course aims to give the opportunity to a new generation of UK PhD students to attend high quality lectures on the analysis of PDE in fluid dynamics, delivered by leading international experts. The four courses are broadly divided in two strands. The first, containing the courses given by Luigi Ambrosio and Yann Brenier, deals with applications in fluid dynamics of optimal transport methods, more specifically the variational approach to the incompressible Euler equations, and the monotone rearrangement and convection theory for the Navier-Stokes and semi-geostrophic equations. The second, containing the courses of Adrian Constantin and Georg Weiss, deals with methods specific to free-boundary problems in fluid dynamics, addressing respectively the bifurcation theory approach to existence of large-amplitude steady water waves with vorticity, and the use of blow-up techniques in the study of regularity and behaviour at singularities in free boundaries.

The four main lecture course topics are:

- Variational models for incompressible Euler equations (Luigi Ambrosio, Scuola Normale Superiore, Pisa)
- Monotone rearrangement and convection theory (Yann Brenier, University of Nice)
- Bifurcation theory in the context of steady water waves (Adrian Constantin, King's College, London)
- Analysis of singularities in free-boundary problems (Georg Weiss, Heinrich Heine University, Düsseldorf)

Guest lectures will be given by Mike Cullen (Met Office) and Camillo De Lellis (University of Zürich).

For further information please visit: www.reading.ac.uk/maths-and-stats/news/LMS-EPSRC-Shortcourse-Reading.aspx

Applications: Applications should be made using the registration form available via the Society's website at: <u>www.lms.ac.uk/content/short-instructional-courses</u>. Research students, postdocs and those working in industry are invited to apply.

The closing date for applications is Monday 27 May 2013. 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

In the event of over-subscription preference will be given to UK-based research students

Fees

All research students registered at a UK university will be charged a registration fee of £100. There will be no charge for subsistence costs.

UK-based postdocs will be charged a registration fee of £250, plus half the subsistence costs (£140) £390 in total.

All others (overseas students and postdocs, those working in industry) will be charged a registration fee of £250 plus the full subsistence costs (£280) £530 in total.

All participants must pay their own travel costs (for EPSRC funded students, this should be covered by their DTA). Fees are not payable until a place on the course is offered but will be due by Friday 28 June.

LMS-EPSRC Short Courses aim to provide training for postgraduate students in core areas of mathematics. Part of their success is the opportunity for students to meet other students working in related areas as well as the chance to meet a number of leading appents in the topic.

BRAUER'S PROBLEMS 50 YEARS ON

A Heilbronn Day and conference entitled Brauer's Problems – 50 years on will be held at the School of Mathematics of the University of Manchester from 2 to 6 September 2013. • Michael Collins (Oxford) The subject of the conference will be Richard • David Craven (Birmingham) Brauer's seminal list of open problems in representation theory, which have profoundly influenced the direction of research in the area • Gunter Malle (Kaiserslautern) since their publication 50 years ago. Geoffrey Robinson is someone who has had particular success working on these problems, and the conference will be a celebration of his 60th birthday.

The conference is preceded by a Heilbronn Day entitled Groups and their Representations on Monday 2 September. The talks for the Heilbronn Day will be aimed at a non-specialist audience.

Speakers for Heilbronn Day:

- Meinolf Geck (Stuttgart)
- Georgle Glauberman (Chicago)

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 should normally be nationals of the UK or 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. Ims.ac.uk/content/cecil-king-travel-scholarship) or by contacting education@Ims.ac.uk. The closing date for applications is Friday 8 March 2013. It is expected that interviews will take place in London in late April or early May.

 Robert Guralnick (Southern California) • Bob Oliver (Paris 13)

Principal speakers for the conference:

- David Benson (Aberdeen)
- Michel Broué (Paris 7)

- Karin Erdmann (Oxford)
- Burkhard Külshammer (Jena)
- Gabriel Navarro (Valencia)
- Raphael Rouguier (UCLA)
- John Thompson (Florida)

Further information may be found at http://personalpages.manchester.ac.uk/staff/ Charles.Eaton/Home.html, where it is also possible to register for the conference. There will be a number of additional 30 minute talks. If you are interested in giving one of these, please contact Charles Eaton at charles. eaton@manchester.ac.uk.

The conference is funded by the Heilbronn Institute, an LMS Conference grant and the Edinburgh Mathematical Society.



CHARACTERISTIC P METHODS IN ALGEBRAIC GEOMETRY

A workshop on Characteristic p Methods in Algebraic Geometry will take place from 2 to 5 April 2013 at Imperial College London. The purpose of the workshop is to introduce graduate students and young postdocs working in Algebraic Geometry and Commutative Algebra to characteristic p methods in Birational Geometry. The main lecturers are:

- James McKernan (MIT)
- Karl Schwede (Penn State)

There will also be invited lectures by Nick Shepherd-Barron (Cambridge) and Chenyang Xu (Utah) tbc. There will also be talks by participants and a poster session.

University and local questhouse accommodation will be available. Funding is available for graduate students based at UK universities. For more information visit the website at http://bit.lv/imperialcharp. The meeting is supported by an LMS Postgraduate Research Conference Scheme 8 grant.

MODELLING BIOLOGICAL EVOLUTION 2013

Recent Progress, Current Challenges and Future Directions

A conference on Modelling Biological Evolution 2013 will take place in the Department of Mathematics in University of Leicester from 1 to 3 May 2013. Mathematical modelling has been widely recognised as a powerful and convenient theoretical tool for investigating various aspects of biological evolution and explaining the existing genetic complexity of the real world. The number of publications on the modelling of biological evolution is constantly accelerating and considering different mathematical frameworks which provide new hypotheses to explain the observed patterns of biodiversity. natural selection and co-evolution of interacting species. The aim of the current meeting is to bring together a number of leading researchers

working in evolutionary modelling in order to clarify the state-of-the-art in this field, to refine the existing challenges and problems, to highlight important recent findings and to outline possible future directions. The list of keynote speakers includes:

- Mike Boots (University of Exeter)
- Mark Broom (City University London)
- Larissa Conradt (Max-Planck Institute, Berlin)
- Alexander Gorban (University of Leicester)
- Eva Kisdi (University of Helsinki)
- John McNamara (University of Bristol)
- Hans Metz (Leiden University)
- Minus van Baalen (Université Pierre et Marie Curie)
- Andy White (Heriot-Watt University)

The scope of the conference is outlined by (but not necessarily limited to) the following topics:

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- Models in Evolutionary Epidemiology of Infectious Diseases
- Models of Somatic Evolution of Cancer
- Models Evolutionary Population Ecology
- Models in Behavioural Ecology and Sociobioloav
- Solving Social Dilemmas
- Models of Evolution of Language
- Models Population and Quantitative Genetics

To register your interest email am379@ leicester.ac.uk. For further information visit the website at www.leicestermath.org.uk/ Morozov/MBE13.htm.

The organizers are Andrew Morozov and Mark Broom. The meeting is supported by an LMS Conference grant.

CONFERENCE FACILITIES

De Morgan House offers 40% discount on room hire to all Mathematical charities and 20% to all not-for-profit organisations. Support the LMS by booking the next London event at De Morgan House.

Call us now on 020 7927 0800 or email roombookings@demorganhouse.co.uk to check availability, receive a quote or arrange a viewing of the venue.

LEGACY OF GOODSTEIN

His Centennial and the Wittgenstein Connection

Report

A one-day meeting was held on 14 December 2012 at the University of Leicester to celebrate the life and work of Reuben Louis Goodstein. Goodstein was born on 15 December 1912 (so that the day of the celebration was one day short of his 100th birthday - inconveniently his actual birthday fell on a Saturday which presented some logistical problems!) and he passed away on 28 March 1985.

Goodstein has a special position in the history of Mathematics in this country, being the



Mary Walmsley (Leicester)



first mathematician to hold a chair in logic in the UK, and his work has had а significant impact on the subsequent development of Mathematical Logic. Although Goodstein's work was concerned with trving to reconstruct math-

along

ematics

Mathieu Marion (Monréal)

finitist lines ironically his major result concerned the sequences of Goodstein Numbers whose (very slow) convergence to zero could not be proved by finitist methods; this needed



the

dinals.

Peano Arithme-

tic, so illustrating Godel's celebrated Incompleteness Theorem.

As Goodstein was Professor of Mathematics at the University of Leicester from 1948 until his retirement in 1977 (he played a very important role in the development of both the Mathematics Department and the University as a whole) it was appropriate that the meeting was held at the University of Leicester.

We were fortunate to assemble a very distinguished list of speakers who were all experts on various aspects of Goodstein's life and work. The first talk was by Harvey Rose (University of Bristol) who spoke on Goodstein: Gentleman and Mathematician. Harvev shared his memories of his own time as a student at Leicester with Goodstein and he then talked about Goodstein's work, starting with the wonderful 'ordinal theorem' about Goodstein sequences referred to above before moving on to primitive recursive arithmetic and analysis. This linked very neatly to the next talk which was by Jan von Plato (University of Helsinki) on Goodstein's theorem in the light of the Bernays-Goodstein correspondence. Here we heard about the influence Bernays had on how Goodstein presented his ordinal theorem and the influence that this work had on Gentzen and others. Not all the correspondence has survived (or, at least, has been located) and there were also some fascinating historical insights, such as Goodstein sending off the only copy of his work (in war time) to Bernays in the knowledge that, if it were lost, then he would have to reconstruct it from scratch!

We then had another fascinating talk, this time by Mathieu Marion (Université du



Québec á Montréal) on Goodstein and Wittgenstein. Goodstein attended Wittgenstein's classes in the early 1930's and seems to have been one of Wittgenstein's favourite pupils. Whilst there does not appear to have been much contact between them after 1935. Wittgenstein sent Goodstein a collection of his manuscripts, including many prepared by Francis Skinner: Goodstein donated these papers to the Mathematical Association in 1971 and they are now being prepared for publication by Arthur Gibson.

Goodstein's role in the Mathematical Association was the main theme of the first talk after lunch, where Mike Price and Marv Walmsley (University of Leicester) spoke on Reuben Louis Goodstein and the Mathematical Association: An Historic Tribute. Goodstein played a very important role in the history of the Association, organizing the transfer of the both the Association's library and its headquarters to Leicester. He served as the Association's

librarian. as

editor of the

Mathemati-

(to which he

contributed

numerous

articles and

book reviews)

and also as the

Association's

talk was by

Stan Wainer

last

president.

The

Gazette

cal



Paul Williams (LSE)

(University of Leeds) on Goodstein Sequences and Arithmetical In-Stan Wainer (Leeds) dependence

Results where we returned to Goodstein's mathematical research and its subsequent influence. Stan started with themes that had been discussed earlier in the day, such as the fact that the ordinal theorem cannot be proved in Peano arithmetic (a result of Kirby and Paris in 1982), and he then moved on to describe many significant subsequent developments in proof theoretical analysis. This rounded off a splendid series of talks which did justice to a wonderful man and a great mathematician; we were very grateful to all the speakers for sharing their work with us in such an engaging and intelligible way.

The meeting was organized by Barry Cooper (University of Leeds) and Paul Williams (LSE) along with Jeremy Levesley and Rick Thomas (University of Leicester). The day was supported by a London Mathematical Society conference grant and, apart from covering the costs of the invited speakers, funding was also provided to help current PhD students attend the meeting. It is now almost 70 years since the ordinal theorem was published and it was good to see the next generation of mathematicians well represented at the meeting; we look forward to seeing how they will build further on Goodstein's legacy in the vears to come.

> **Rick Thomas** University of Leicester

No. 423 March 2013

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LMS INVITED LECTURES 2013



Professor Fedor Bogolomov (Courant Institute, NYU)

Birational Geometry and Galois Groups

10-14 June 2013 University of Edinburgh

The lectures will discuss the relation between the structure of the Galois group of algebraic closure of a field of rational functions and the structure of the field itself. More precisely, they will cover how to extract effectively birational invariants (i.e. geometric invariants of projective models of the field from the Galois group).

There will also be supplementary lectures by:

- G. Brown (Loughborough) Fano 4-fold hypersurfaces
- I. Cheltsov (Edinburgh) Finite subgroups of Cremona group
- T. Logvinenko (Warwick) Derived categories and birationality

University and local Guesthouse accommodation will be available.

Limited financial support is available with preference given to UK research students. Please contact the organisers for further details (i.cheltsov@ed.ac.uk, J.Martinez-Garcia@sms.ed.ac.uk).

Deadline for funding: 1 May 2013.

For further details on the 2013 Invited Lectures visit www.maths.ed.ac.uk/ cheltsov/fedya/

WOMEN IN MATHEMATICS DAY 2013

The Women in Mathematics Day is an annual event organised by the London Mathematical Society. This year it will be replaced by a **two day event on 18-19 April** and will be held at the **Isaac Newton Institute in Cambridge**. 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, especially 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 Beatrice Pelloni (b.pelloni@reading.ac.uk) by **15 March 2013**.

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 2013.

Programme

DAY 1 (18 April)		DAY 2 (19 April)	
10.30-11.00	Registration and Coffee	09.00-13.00	Morning Session
11.00-12.30	Morning Session		Nalini Joshi (University of Sydney)
	Gwyneth Stallard (Open University)		Junior Talks
	Sarah Dance (University of Reading)		Corinna Ulcigrai (University of
12.30-13.30	Lunch and Poster Session		Bristol)
13.30-18.30	Afternoon Session	13.00-14.00	Lunch and Poster Session
	Junior Talks	14.00-16.30	Afternoon Session
	Athena SWAN and good practice		Discussion groups
	in university mathematics departments		Colva Roney-Dougal (University of
	Funding Talk and discussion groups		St Andrews)
18.30-19.30	Reception	16.30	Meeting closes
19.30	Dinner		-

There will be a dinner on the evening of 18 April at Murray Edwards College, funded by the Cambridge mathematics departments and lunch on both days will be funded by the LMS. Bed and breakfast accommodation will be available at Murray Edwards College at a cost of £69.75 per night (or a reduced rate for those willing to share). The INI will book accommodation if requested on the registration form.

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@Ims.ac.uk for further details.

Register by 1 April 2013 at www.newton.ac.uk/women/WIM/wimw02.html. (Late registrations for places may be accepted, subject to availability.)

The Women in Maths Day 2013 event has received additional funding support from the Clay Mathematics Institute, Isaac Newton Institute and Cambridge University.

IWASAWA THEORY AND GALOIS REPRESENTATIONS

A workshop on the subject of *Iwasawa Theory and Galois Representations* will take place at the University of Warwick from 8 to 12 April 2013. This workshop is part of the 2012-13 EPSRC Warwick Number Theory Symposium, and is organised by John Cremona and Samir Siksek (Warwick), with John Coates (Cambridge), Sarah Zerbes (UCL) and Christian Wuthrich (Nottingham). Invited speakers include:

- Konstantin Ardakov (QMUL)
- Denis Benois (Bordeaux)
- Laurent Berger (Lyon)
- Thanasis Bouganis (Heidelberg)
- David Burns (KCL)
- Xavier Caruso (Rennes)
- John Coates (Cambridge)
- Takako Fukaya (Chicago)
- Mahesh Kakde (KCL)

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- Minhyong Kim (Oxford)
- Zhibin Liang (Beijing)

United Kingdom Mathematics Trusts seeks a new Secretary

The UKMT is seeking a successor to its current Secretary, whose term of office ends in 2014. The UKMT has a strong 15 year record for its mathematical enrichment activities for school pupils. The position of Secretary is a voluntary one, but is supported by the Director and the other paid staff of the Trust. It might particularly suit someone who has recently retired or who will shortly retire, and who wishes to keep their connection with the mathematical community and continue to contribute to it. Anyone interested should contact enquiry@ukmt.org.uk to find out more about what the role involves.

- David Loeffler (Warwick)
- Jan Nekovář (Jussieu)
- Victor Rotger (Barcelona)
- Romyar Sharifi (Arizona)
- Sujatha Ramdorai (UBC)

For further information visit the website http://www2.warwick.ac.uk/fac/sci/maths/ research/events/2012-2013/numbertheory/ which gives further information, including how to register. This meeting is supported by EPSRC and the Warwick Mathematics Research Centre.

HIGHER RANK AUTOMORPHIC FORMS AND L-FUNCTIONS

A workshop on the subject of *Higher Rank Automorphic Forms and L-functions* will take place at the University of Warwick from 29 April to 3 May 2013. This workshop is part of the 2012-13 EPSRC Warwick Number Theory Symposium, and is organised by John Cremona, David Loeffler and Samir Siksek (Warwick), with Luis Dieulefait (Barcelona) and Toby Gee (Imperial). Invited speakers include:

- Tobias Berger (Sheffield)
- Andrew Booker (Bristol)
- Armand Brumer (Fordham)
- Kevin Buzzard (Imperial)
- Fred Diamond (KCL)
- Jens Funke (Durham)
- Michael Harris (Paris 7) tbc
- Richard Hill (UCL)
 - Kai-Wen Lan (Minnesota)
 - Tony Scholl (Cambridge)
 - Chris Skinner (Princeton)
 - Shaun Stevens (UEA)
 - Jacques Tilouine (Paris 13)
 - Lynne Walling (Bristol)
 - Teruyoshi Yoshida (Cambridge) tbc

For further information visit the website http://www2.warwick.ac.uk/fac/sci/maths/ research/events/2012-2013/numbertheory/ which gives further information, including how to register. This meeting is supported by EPSRC and the Warwick Mathematics Research Centre.

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www.bristol.ac.uk

School of Mathematics

Salary on Professorial scale to be agreed on appointment (or between £47,314 - £52,233 per annum if appointed at Reader)

The University of Bristol seeks an outstanding candidate for a post as Heilbronn Professor/Fleader in Combinatorics. The successful candidate will become a member of the Pure Mathematics Group within the School of Mathematics. We are seeking applicants who have demonstrated, or shown potential for, the highest achievement in any area of combinatorics, broadly interpreted.

This position forms part of the University's strategic expansion in research areas that complement existing strengths in Pure Mathematics at Bristol. The successful candidates will be expected to build up and lead a research group of the highest international level, and to interact with Heilbronn postdoctoral fellows.

The Pure Mathematics Group at the University of Bristol is internationally recognised with interests spanning pure mathematics, including number theory, arithmetic geometry, arithmetic combinatorics, ergodic theory, random matrix theory, representation theory, complex analysis, partial differential equations, set theory and logic. The Group has strong links with the Heilbronn Institute for Mathematical Research, which focuses on cliscrete mathematics, funds about 20 postdoctoral fellows in the School of Mathematics, and runs a co-ordinated series of research programmes, conferences and workshops.

The School of Mathematics is one of the leading centres for research and teaching in mathematics in the UK. There are groups working in Applied Mathematics, Pure Mathematics and Statistics. In the 2008 Research Assessment Exercise (RAE), Applied Mathematics ranked third, Pure Mathematics ranked joint fifth and Statistics ranked joint fourth in terms of grade-point average.

Women are currently under-represented in the School of Mathematics, therefore we particularly welcome applications from women for this post. The University has numerous family friendly policies which can be found on the Positive Working Environment website.

In order to receive full attention, applications should be received by 12:00 pm (i.e. midnight) on Monday 1 April 2013.

To discuss any aspect of the posts, please contact Professor Trevor Wooley, FRS, +44 (0)117 331 5240, matdw@bristol.ac.uk

Alternatively, please feel free to contact any of the people listed below for informal discussions with respect to the post:

Lynne Walling, Head of Pure Mathematics, +44 (0)117 331 5245, malhw@bristol.ac.uk

Professor Noah Linden, Head of the School of Mathematics, +44 (0)117 928 8633, hod-maths@bristol.ac.uk

To apply please visit our web site at www.bris.ac.uk/jobs enter the vacancy number ACAD100199 into the job search and follow the link to the on line application process.

The closing date for applications is 1st April 2013.

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AMERICAN MATHEMATICAL SOCIETY



University

LECTURE Series

Regularised Integrals,

Sums and Traces

An Analytic Point of View

Sylvie Paycha

American Mathematical Societ

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INTRODUCTION TO QUANTUM GRAPHS

Gregory Berkolaiko & Peter Kuchment, Texas Ae3M University

Quantum graphs present many non-trivial mathematical challenges, which makes them dear to a mathematician's heart. Work on quantum graphs has brought together tools and intuition coming from graph theory, combinatorics, mathematical physics, PDEs, and spectral theory. This book provides a comprehensive introduction to the topic, collecting the main notions and techniques. It also contains a survey of the current state of the quantum graph research and applications.

Mathematical Surveys and Monographs, Vol. 186 Dec 2012 275pp 9780821892114 Hardback £64.95

REGULARISED INTEGRALS, SUMS AND TRACES An Analytic Point of View

Sylvie Paycha, Universität Potsdam es Université Blaise Pascal

"Regularisation techniques" is the common name for a variety of methods used to make sense of divergent series, divergent integrals, or traces of linear operators in infinitedimensional spaces. Such methods are often indispensable in problems of number theory, geometry, quantum field theory, and other areas of mathematics and theoretical physics. However arbitrary and noncanonical they might seem at first glance, regularised sums, integrals, and traces often contain canonical concepts, and the main purpose of this book is to illustrate and explain this. This book provides a unified and self-contained mathematical treatment of various regularisation techniques. The author shows how to derive regularised sums, integrals, and traces from certain canonical building blocks of the original divergent object.

University Lecture Series, Vol. 59 Jan 2013 193pp 9780821853672 Paperback £32.50

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Research highlights from the leading mathematical journals

Volume 77 Number 1 2013

MATHEMATICAL 1 Успехи Математических

Volume 204 Numbers 1-2 2013

Izvestiya: Mathematics Russian Mathematical Surveys iopscience.org/im iopscience.org/rms

Sbornik: Mathematics iopscience.org/msb

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New in 2013

From 2013 all subscriptions to the journals include electronic access dating from the first English translation volumes at no extra cost.





WINTER COMBINATORICS **MEETING**

Report

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The fourteenth annual Winter Combinatorics Meeting took place on Wednesday 30 January 2013 at the Open University Campus in Milton Keynes. The snow thankfully having melted several days earlier, 43 people negotiated the roundabouts of Milton Keynes to attend. The meeting was supported by the London Mathematical Society and the British Combinatorial Committee.

After coffee (and delicious cake provided by Bridget Webb), the first speaker was David Conlon (Oxford), whose talk Extremal results in sparse pseudorandom graphs described a framework in which it is possible to prove sparse graph analogues of a number of wellknown extremal results on dense graphs, such as Ramsev's theorem and the Erdős-Stone-Simonovits theorem. One component of this framework is Kohayakawa and Rödl's sparse graph extension of Szemeredi's regularity



а counting lemma compatible with this extension remained an open problem until recently. Next. in

a talk entitled The Merino–Welsh conjecture: inegualan ity for Tutte

polynomials, Steven Noble (Brunel) discussed various approaches to prove the conjecture, which predicts the existence of a simple inequality relating the number of spanning trees, acyclic orientations and totally cyclic orientations of any graph. The speaker presented a proof that a stronger version of the

conjecture is true in the case of series-parallel networks.

After a 90-minute break for lunch, lain Moffatt (Royal Holloway, University of London) described Partial duals of embedded graphs, a generalisation of the classic geometric dual of a graph in which the operation of "dualising" is applied only to certain edges and faces. Unlike the geometric dual of a graph, the partial dual does not necessarily preserve the genus of the graph. Thus, a first natural task is to characterise the graphs for which there is a partial dual which can be embedded on a surface of genus zero. The speaker described this work, and explained how it can be applied to knot theory.

David Evans (University of East Anglia) spoke next on Matroids in model theory. He described a model-theoretic construction from the late 1980s due to Hrushovski. which at the time was used to provide counterexamples to two conjectures in model theory, and also a negative answer to a related question. The speaker then explained a connection between this construction and cotransversal matroids (also known as strict gammoids), which were first studied in the 1970s by Mason.

Finally, after tea (and more cake), Mireille Bousquet-Mélou (Université Bordeaux 1) talked on Asymptotic properties of some minor-closed classes of graphs, considering questions such as: what is the probability that a uniformly sampled graph on n vertices from a given minor-closed class is connected? The answer to this guestion when the excluded minors defining the class are all 2-connected is due to McDiarmid. The speaker demonstrated, by means of several examples, that when non-2-connected excluded minors are permitted the answer can be rather more varied. The results rely on the (exponential) generating function for the connected graphs in the class, and how it behaves near its radius of convergence.

After the meeting, 19 of the participants travelled into central Milton Kevnes for an early-evening dinner at Café Rouge. This provided further opportunity for mathematical

discourse, particularly when it came to sort- finable subsets of algebraically closed valued ing out the bill!

> Robert Brignall The Open University

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

BRITISH POSTGRADUATE MODEL THEORY CONFERENCE 2013

Report

Model Theory is an area of logic which seeks to classify mathematical theories by appealing to various notions of tameness. The methods of model theory often require analysis of definable subsets of structures, which has led to one popular characterisation of model theory as 'algebraic geometry without the restriction of fields'. This powerful philosophy has led model theory to find applications in many areas of pure and applied mathematics, including number theory, functional analysis, integrable systems and mathematical physics.

Since 2011 each January has seen postgraduate students and postdocs working in Model Theory meet for the British Postgraduate Model Theory Conference. This year the meeting was held at the University of Manchester from 16 to 18 January, having previously been held at Leeds and Oxford. Over 40 participants attended from Britain, Europe and further afield.

The conference spanned three days, and combined talks from invited academics with presentations of research students' own work. The first morning was opened with two talks from researchers working in geometric model theory, before Alex Wilkie (Manchester) gave the first hour of his short course. This three lecture series gave many their first taste of o-minimal number theorv, and included the presentation of a new proof of the Pila-Wilkie counting theorem. Later in the day we heard from Francoise Delon (Paris 7) who discussed externally de-

fields. After the final student talk of the day on definable valuations, the evening continued with a poster session. This allowed for more mathematical and non-mathematical discussion in a relaxed atmosphere, which was washed down with the accompanying wine and cheese.

Valuation theory was a continuing theme throughout the conference, with several contributed talks touching on the subject. The second day also saw talks on the model theory of modules and was the night of the conference dinner. For this we decided to indulge the guests in a particularly British institution – a curry. A Punjabi banquet was hosted at Northwest restaurant chain East-ZEast, and proved to be a real highlight.

The following morning we heard from Anand Pillay (Leeds), who gave his perspective on recent developments in model theory. Anand also suggested some priorities for model theory in the future. The talk sparked thoughtful discussion about the extent to which the subject can be split into Pure and Applied strands. The last day saw many research talks concerning aspects of the subject related to combinatorics and symmetry, including homogeneous structures. The final invited talk of the event was from Mike Prest (Manchester). Mike explained the deep connections between the representation theory of finite dimensional algebras and their model theory, and provided many exotic examples from tubular algebras.

The conference was an excellent opportunity to meet other young researchers and share ideas. After a successful conference, we hope that this meeting is now firmly cemented in the model theory calendar, and with the event due to return to its birthplace in Leeds in 2014 we are looking forward to the next edition already. The conference was supported by an LMS Postgraduate Research Conference Scheme 8 grant. A photograph from the conference can be found on the back cover of this Newsletter.

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Isaac Newton Institute

for Mathematical Sciences

NEW MATHEMATICAL DIRECTIONS FOR QUANTUM

INFORMATION

2 – 6 September 2013

in association with the Newton Institute programme Mathematical Challenges in Quantum Information (27 August – 20 December 2013)

Workshop Organisers: Ashley Montanaro (Cambridge), Noah Linden (Bristol) and Andreas Winter (Bristol/Barcelona).

In recent years the field of quantum information theory has undergone explosive growth, and progress has been made on many of the most long-standing open problems in the field. Such progress has frequently relied on increasingly sophisticated and diverse mathematical tools. The goal of this workshop is to widely disseminate knowledge of these tools and the underlying mathematics involved, and to discuss exciting new directions for the field.

In this workshop, we aim to bring together experts in mathematics, quantum chemistry and quantum information theory to discuss recent developments, communicate open problems as well as to identify new research directions in the study of quantum marginals:

- De Finetti theorems
- Interactive proofs
- Measure concentration
- Quantum computational complexity
- Random matrix theory
- XOR games

The workshop will take place between Monday 2 September and Friday 6 September 2013. It will consist of a series of tutorial and invited talks, encompassing both presentations of recent results in quantum information theory and introductions to the mathematical tools which can be used to attack outstanding problems in the field. There will also be a poster session, at which attendees are encouraged to present their work.

Further information and application forms are available from the website at www.newton.ac.uk/programmes/MQI/mqiw01.shtml.

Closing date of the receipt of applications is 24 May 2013.



Isaac Newton Institute for Mathematical Sciences



NON-EQUILIBRIUM STATISTICAL MECHANICS AND THE THEORY

OF EXTREME EVENTS IN EARTH SCIENCE

29 October – 1 November 2013

in association with the Newton Institute programme Mathematics for the Fluid Earth (21 October – 20 December)

Workshop organisers: Mike Cullen (Met Office), Klaus Fraedrich (Hamburg), Valerio Lucarini (Hamburg/Reading), Beatrice Pelloni (Reading) and Sandro Vaienti (Marseilles).

The subject matter is molecular-based/statistical mechanical theory and the simulation of liquid crystals, including colloidal liquid crystals.

Contributions to the workshop are encouraged in relevant areas and e.g. in the following topics: large deviation theory, extreme value theory, dynamical systems, bifurcations, chaos, predictability, Lyapunov exponents and vectors, data assimilation, multifractal properties of fluid flows, long-term memory, turbulence, stochastic processes, response theory for non-equilibrium systems.

This event will hopefully give impetus for extending the collaboration between meteorologist, climate scientists, physicists, and mathematicians.

Further information and application forms are available from the website at www.newton.ac.uk/programmes/MFE/mfew01

Closing date of the receipt of applications is 15 September 2013.

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OBITUARIES

TERRY HALLETT

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Professor Terry Hallett, who was elected a member of the London Mathematical Society on 18 December 1958,

died on 27 November 2012, aged 76.

Eira Scourfield writes: She was born Joan Terry Collar on 21 April 1936 in London, and was in the first cohort to obtain a BSc degree from the newly independent Exeter University in 1957. She then worked on group theory under Professor Hirsch at Queen Mary, London, obtaining her PhD in 1961, and later publishing five papers with him. She taught in several Universities, mainly in the USA: Royal Holloway, London University, in 1959-60; California State University Northridge in 1960-62; University of Nevada, Reno, part time from 1978 until her appointment in 1981 to California State University San Bernardino (CSUSB). She remained there until her retirement in 2006, whilst commuting

San Bernardino (CSUSB). She remained there until her retirement in 2006, whilst commuting back and forth to the family in Reno. Terry and John Hallett married in 1960, and started their family in 1963 when John returned to his position in the Physics Department of Imperial College. In 1966 they moved to Reno, Nevada, and Terry retained her interest in Mathematics and improved her computer skills whilst caring for their four daughters.

Professor Peter Williams kindly provided me with information about Terry's career in CSUSB where she was a valued colleague with various department responsibilities and an enthusiastic teacher keen to introduce new ideas such as using the computer interactively to teach statistics. She had a sabbatical at Roval Hollowav to work in statistics, and another later whilst studying for a Masters degree in Mathematical Education at Exeter University. Her varied activities included writing a statistics paper with Barry Arnold at UCR, grading the Advance Placement Statistics exam in the USA, and collaborating with her husband John in his Physics research which resulted in three joint publications. With Peter Williams she worked on developing Hv-

percard activities, and was part of a team which obtained an NSF grant to produce interactive material for College Algebra and Precalculus, which led to a text with accompanying software published in 2004.

After retirement from CSUSB, Terry taught courses at Truckee Meadows Community College in Reno until a few weeks before her death from cancer. She was a frequent visitor to England to see her family, especially latterly her Mother who died in 2011 aged 101. Terry is survived in the USA by her husband John, four daughters, and nine grandchildren, and, in England, her brother Richard.

EDWARD ODELL

Edward (Ted) Odell, a great mathematician and world expert in Functional Analysis, died suddenly on 9 January 2013 in Houston, Texas.



Ted was born on 15 March 1947 near Pleasantville, New York, where he grew up. He completed his undergraduate studies at the State University of New York at Binghamton. He received his PhD from MIT in 1975 but in fact completed his research at Ohio State in Columbus, Ohio. He went there to work with Bill Johnson in Banach space theory, which he liked after an introduction to it in a course at Binghamton. His dissertation was outstanding and contained two important papers, one with Johnson and another with Haskell Rosenthal as well as many more results. After a post-doc at Yale. Ted moved to Austin with his wife Gail to take up a faculty position in the Mathematics Department at the University of Texas in 1977. He became full professor in 1990 and the John T. Stuart III Centennial Professor of Mathematics in 2005. For the last three years he was also the Associate Chair of Undergraduate Studies.

Ted Odell was a very highly regarded member of the Banach space community. He authored nearly a hundred research articles including many that represented major breakthroughs in the subject. He was an expert in L_P spaces and in combinatorial and set-theoretic methods in analysis. Amongst his collaborations, the one with Thomas Schlumprecht was the most prolific, resulting in about a third of his papers and spanning the last quarter of a century. One of the highlights is their solution of the famous distortion problem for Hilbert space in the early 1990s. Very recently, with Richard Haydon and Thomas Schlumprecht he achieved remarkable new results on the structure of *Lp*. With Dan Freeman and Schlumprecht he established the universality of *I*1 as a dual space thereby solving longstanding open problems. He settled another old problem with Bill Johnson proving that the isomorphism class of a separable infinite-dimensional space has infinite diameter.

Ted visited and gave lectures all over the world. He was an invited speaker at the ICM in Zürich in 1994. He first came to the UK in 1977 to work with Richard Haydon in Oxford. This was followed by many more visits and lectures in Edinburgh, Lancaster, Leeds and Cambridge. In the last decade he had collaborations with András Zsák in Cambridge and more recently also with Niels Laustsen in Lancaster. Colleagues will remember his kindness and generosity. At conferences he always looked out for newcomers and made sure they felt welcome by the community. Young people always felt comfortable to approach him and to ask questions. He loved clever ideas and was good at coming up with them and, when progress was slow, his typical New York style dry humour never failed to cheer up those working with him.

He is survived by his wife Gail, daughters Holly and Amy, and son-in-law Mark.

András Zsák DPMMS, Cambridge

ALEKSANDER PEŁCZYŃSKI

Aleksander (Olek) Pełczyński – a great mathematician and participant in the Polish school of functional analysis (Banach, Mazur, Orlicz, ...) – passed away in Wrocław

on 20 December 2012, and was buried in the Merit Allée of the Military Cemetery in Warsaw

on 4 January 2013.

Olek was born on 2 July 1932 in Tarnopol, then in Poland. As a laureate of the first Polish Mathematical Olympiad, he entered Warsaw University in 1950 without taking any entrance examination. He completed his PhD studies at the Mathematical Institute of the Polish Academy of Sciences (IMPAN) in 1958; his master's and PhD dissertations were supervised by Stanisław Mazur; he obtained his habilitation in 1963 and became an extraordinary professor in 1969 and an ordinary one in 1974. In 1976, he was elected a corresponding member and in 1989 a full member of the Polish Academy of Sciences.

Olek became a teaching assistant at Warsaw University in 1954, and worked there until 1967. Then he moved to IMPAN, and worked there until the end of his life; he served as a deputy director, and later as the head of the Functional Analysis Section and of PhD studies. Since 1970 he was a member of the Editorial Board of Studia Mathematica.

Aleksander Pełczyński worked mostly in functional analysis and infinite-dimensional topology, and he has about 150 publications. He was twice invited to be a speaker at an International Congress of Mathematicians (in 1968 in Moscow and in 1982 in Warsaw). He gave lectures all over the world; in particular he visited the UK at least five times, first in 1973 for lectures in Cambridge and then in 1974 as a member of the Scientific Committee of a conference in Durham.

Aleksander Pełczyński was awarded several scientific and state honours, including the Banach Medal of the Polish Academy of Sciences. He was awarded four honorary doctorates (Brussels, Jena, Kent (Ohio) and Poznań).

Olek was also interested in the humanities. During his student years he published poems in a student journal and acted in plays. He also had a deep knowledge of European and American history.

Aleksander is survived by his wife Krystyna, son Michał, daughter Katarzyna, and his grandchildren.

Wiesław Żelazko Polish Academy of Sciences, Warsaw

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REVIEWS

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The Universe in Zero Words: The Story of Mathematics as Told through Equations by Dana Mackenzie, 2012, Princeton University Press, 224 pp, £19.95, \$27.95, ISBN: 978-0-6911-5282-0.

The ambitious goal of *The Universe in zero words* is given in the book's subtitle : to present 'the story of mathematics as told through equations'. And Dana Mackenzie does exactly that, in a fashion that is at the same time extremely entertaining and stimulating.

While most popularization books on mathematics try and avoid discussing technicalities, Mackenzie takes the exact opposite approach. Each chapter is devoted to a single equation, worth examining because 'It is surprising, [...] concise, [...] consequential [and] universal'. By this clever choice of equations, ranging from the bases of arithmetic and the Pythagorean Theorem to the Chern-Gauss-Bonnet

rean Theorem to the Chern-Gauss-Bonnet equation and the Black-Scholes equation, the book presents a very attractive overview of the history of mathematics. Organized in chronological order, the equations Mackenzie decided to discuss illustrate the successive waves of new thinking and revolutionary ideas which shaped mathematics, from antiguity to our time.

In each chapter, the striking new idea that led to the equation or law presented is put back in its historical and scientific context. By giving lots of biographical details about the scientists involved (mathematicians from Pythagoras, Fermat, Newton and Euler to Galois, Hamilton, Lagrange, Fourier and Gödel, but also physicists like Kepler, Maxwell, Einstein or Lorentz), as well as displaying plenty of beautiful illustrations. Mackenzie has produced a verv accessible book that will appeal to many non-mathematicians, while specialists will also enjoy the variety of themes that are introduced, and the rigour with which they are discussed.

As well as the outbreak of new concepts



or new connections, and their impact on the scientific community and the history of knowledge, Mackenzie always tries to describe more « mundane » applications (from Marconi's radio waves and lasers to MRI scans and financial crashes), reminding us, if needed, of the extreme topicality of mathematics.

With a book that is both short and very easy to read, Mackenzie manages to introduce a very wide scope of ideas, and to produce a condensate of the history of mathematics that is at the same time enlightening and engaging. He succeeds in discussing highly advanced science while remaining very comprehensible, and in popularizing mathematics and physics while also giving food for thought to the specialist. His Universe in Zero Words will therefore seduce any scientist, but also anyone with some curiosity and desire to get more familiar with the history of human thinking and knowledge.

> Jean-Baptiste Gramain University of Aberdeen

newsletter@lms.ac.uk

Sciencia: Mathematics, Physics, Chemistry, Biology, and Astronomy for All edited by John Martineau, Wooden Books, 2011, £14.99, ISBN 13-978-1-90715512-3.

Imagine that you had to summarize all of modern science in just over 400 not-particularly-large pages, as John Martineau, the editor of this volume, has claimed in an interview it does. Pictures and diagrams would be essential, as would a clear structure, but would the task really be aided by the constraint that every section had to be addressed by a verso page of text (about 250 words) and a recto page of pictures? Big claims aside, this is a compilation of six previous Wooden Books, slightly enlarged (both in size and content) but mostly independent of one another bar a few cross-references.

The first two are Q.E.D.: Beauty in Mathematical Proof by Burkard Polster and Useful Mathematical & Physical Formulae by Matthew Watkins. I discussed these in Newsletter 372 and Q.E.D. is once again the best of the bunch. The editor tells us



in his preface that it serves 'to remind us that some things are just obvious', a comment that seems guite misguided. Third comes Essential Elements by Matt Tweed, who also wrote the sixth, The Compact Cosmos. Chemistry and cosmology are big subjects and the treatment of each is more of a tour than a visit. Ouantum physics and relativity have to be brought in in a few pages each, and although we're referred back to the formulae given in Book II it would be over-optimistic to suppose that a reader who was new to these subjects could make much headway on what is given here, and yet technical terminology is very consciously used. Despite the best of intentions these books will be more satisfying to someone who wants to own a book with the word fermion in it, than to someone who wants to understand what one is. Similar comments could be made about Evolution by Gerard Cheshire with Lindi Houseman and The Human Body by Moff Betts but each contains additional hackle-raising snippets, such as the uncrit-

ically presented statement in the former that Rupert Sheldrake 'showed that people can sense when they are being stared at', or the latter's assertion that 'baffled boffins interpret prana, or chi, as electricity, central nervous gating effects explaining the ability of acupuncture to anaesthetize'. Such New-Age ideas by no means predominate but they are, in A.P. Herbert's words, 'like the thirteenth stroke of a crazy clock, which not only is itself discredited but casts a shade of doubt over all previous assertions'.

Buy Q.E.D. on its own and put the money you save towards other books on the other subjects there's ever been a better choice than there is now. They may not be so artfully or copiously illustrated, but sometimes a single word can be worth a thousand pictures.

http://newsletter.lms.ac.uk

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 2013

1 LMS Mary Cartwright Lecture, London (422)

13 Tom Kibble's 80th Birthday Meeting, Imperial College London (423)14 Mathematics of Planet Earth IMA Confer-

ence, London (423) 14 David Crighton Lectures, Royal Society, London (422)

18 LMS Northern Regional Meeting, Newcastle University (423)

18-22 Triangulations and Mutations Workshop, Newcastle (423)

18-22 Explicit Methods for Modular Forms Workshop, Warwick (422)
18-22 Analytical and Computational Paths from Molecular Foundations to Continuum Descriptions Workshop, INI Cambridge (419)
19 Modelling the World, Gresham College
19 Large Evolving Networks Workshop,

Bristol (421)

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20 Geometry and Topology Day, University College London (421)

20-22 Young Functional Analysts' Workshop, Sheffield (421)

22-23 NBFAS, Sheffield (421)

25-26 Data Analysis for Cyber Security Workshop, Bristol (421)

25-27 Quantitative Modelling in the Management of Health and Social Care 7th IMA Conference, Central London (416) 25-27 Distinguished Lecture Series, Bristol (422)

25-28 BMC, Sheffield (420)

26 LMS Meeting at BMC, Sheffield (423)

26 Contemporary Challanges for the Delivery of Undergraduate Mathematics Courses, Sheffield (421)

APRIL 2013

2-5 Operads and Deformation Theory INI Conference, Cambridge (418)

2-5 Characteristic *p* methods in Algebraic
Geometry, Imperial College, London (423)
3-5 Quantum Fields, Gravity and Information. Nottingham (422)

8-9 Mathematics in Finance IMA Conference, Heriot-Watt University (416)

8-12 Iwasawa Theory and Galois Representations, Warwick (423)

8-12 Advances in Number Theory and Dynamical Systems Conference, Bristol (421)
9-11 Large Deviations and Asymptotic Methods in Finance Workshop, Imperial College London (422)

9-12 BAMC, Leeds (421)

10 Finite Simple Groups, Algebraic Groups and their Impact, Birkbeck, London12-13 Integrable Models, Conformal Field

Theory and Related Topics, Herts (423) 15-16 Higher Structures in Topology and Number Theory Workshop, Oxford (423) 15-17 Conformal Geometry and Function Theory in Mapping, Imaging and Sensing, Imperial College London

15-19 Common Themes in Financial & Actuarial Mathematics LMS EPSRC Short Course, Liverpool (423)

15-19 Geometric and Topological Graph Theory Workshop, Bristol (421) **18-19 Women in Maths Day, Cambridge**

(423)

25 Quantum Algorithms Day, Bristol (421) 25-26 Young Topology Meeting, Imperial College, London (422)

26 LMS Meeting at BMC, Sheffield (423)

27 Early Career Mathematicians' IMA Conference, Cardiff

29-30 Operator Spaces and Operators on
Banach Spaces Meeting, Lancaster (423)
29 - 3 May Higher Rank Automorphic Forms and L-functions, Warwick (423)

MAY 2013

1-3 Modelling Biological Evolution 2013 Conference, Leicester (423)
10-11 String Math UK, Surrey
13 Operator Algebra Day, Aberdeen (423)
14 LMS-Gresham Lecture, Peter Cameron.

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Museum of London (423)

JUNE 2013

5 Combinatorics One Day Meeting, Oxford 10-14 LMS Invited Lecturers, Fedor Bogolomov, Edingburgh (423) 11 LMS Midlands Regional Meeting, Leicester (423)

11-14 MAFELAP 2013, Brunel 12-14 Advances in Surface Theory Workshop, Leicester (423)

17-20 Young Researchers in Mathematics 2013, Edinburgh

20-21 High-Dimensional Inference with Applications, Kent

24-28 Liquid Crystal Defects and their Geometry INI Workshop, Cambridge (421)

24-28 Dynamics of Suspensions, Gels, Cells and Tissues INI Workshop, Cambridge (422) 30-5 Jul British Combinatorial Conference, Royal Holloway College, University of London (422)

JULY 2013

1-2 Bifurcation Theory, Numerical Linear Algebra and Applications, Bath
1-4 Dense Granular Flows 2nd IMA

Conference, INI, Cambridge (416) 3-13 Polylogarithms as a Bridge between

Number Theory and Particle Physics LMS-EPSRC Durham Symposium 5 LMS Meeting, London

8-12 O-Minimality and Diophantine Geometry, LMS-EPSRC Short Course, Manchester (423)

8-12 Modern Nonlinear PDE Methods in Fluid Dynamics, LMS-EPSRC Short Course, Reading (423)

8-12 Banach Algebras and C*-algebras Meeting, IMPAN, Warsaw (423)
15-19 Polynomial Optimisation Summer School and Workshop, INI, Cambridge (420)
15-25 Graph Theory and Interactions LMS-EPSRC Durham Symposium
29-2 Aug Computational Group Theory, LMS-EPSRC Short Course, St Andrews (423)

AUGUST 2013

3-11 Groups St Andrews 2013, St Andrews (410)

19-23 Random Graphs, Geometry & Asymptotic Structure LMS-EPSRC Short Course, Birmingham
26-30 Topology in Low Dimensions LMS-EPSRC Short Course, Durham

SEPTEMBER 2013

2 Heilbronn Day, Groups and Their Representations, Manchester (423) 2-6 New Mathematical Directions for Ouantum Information INI Workshop, Cambridge (423) 3-6 Brauer's Problems in Representation Theory – 50 years on, Manchester (423) 9-13 Spectral Geometry, Chaos and Dynamics, Loughborough 11-13 Mathematics of Surfaces 14th IMA Conference, University of Birmingham (416) 15-21 Quantum (semi)groups and (co)actions Meeting, Leeds (423) 16–20 Holography: From Gravity to Quantum Matter INI Workshop, Cambridge 22-27 Heidelberg Laureate Forum, Heidel-

berg (422)

OCTOBER 2013

29 Oct – 1 Nov Non-Equilibrium Statistical Mechanics and the Theory of Extreme Events in Earth Science INI Workshop, Cambridge (423)

NOVEMBER 2013 15 LMS AGM, London

APRIL 2014

7-10 British Mathematical Colloquium, QMUL

AUGUST 2014

13-21 ICM 2014, Seoul, Republic of Korea (403)

17-19 Mathematical Cultures Conference, De Morgan House, London (417) 35

LMS-FUNDED MEETINGS

Winter Combinatorics Meeting held at the Open University on 30 January 2013 (report on page 26)



Steven Noble (Brunel University)



lain Moffatt (Royal Holloway, University of London)



Mireille Bousquet-Mélou (Université Bordeaux 1)



David Evans (University of East Anglia)

British Postgraduate Model Theory Conference held at the University of Manchester from 16 to 18 January 2013 (report on page 27)

