THE LONDON MATHEMATICAL SOCIETY

NEWSLETTER

No. 397 November 2010

Society Meetings and Events

2010

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London

Tuesday 19 July
Northern Regional Meeting, Leeds

NEWSLETTER ONLINE:

Go to www.lms.ac.uk/newsletter

2010 ELECTIONS TO COUNCIL AND NOMINATING COMMITTEE

The ballot papers for the November elections to Council and Nominating Committee were circulated with the October *Newsletter*. Nominating Committee put forward names for each Officer post; in addition members proposed a further candidate for the Education Secretary post. A total of nine candidates have been proposed (eight by Nominating Committee, one by members) for the six vacancies of Members-at-Large of Council.

Four names have been proposed (all by Nominating Committee) for two vacancies in the membership of the Nominating Committee.

Please note that completed ballot papers must be returned by **Thursday 11 November 2010**.

Members should have received the following: a pink (folded A4) ballot paper for the elections to Council; a blue A5 ballot paper for elections to Nominating Committee; a white A5 booklet with biographical details of candidates; a white return envelope. If you are missing any of these items please contact Duncan Turton at De Morgan House (nominations@lms.ac.uk).

A separate form for suggesting names to the Nominating Committee for potential candidates for the 2011 elections was also included with the October *Newsletter*. Members are also able to make direct nominations; details will be given in the April and May *Newsletter* next year.

ANNUAL GENERAL MEETING

The Annual General Meeting of the Society will be held at 3.15 pm on Friday 19 November 2010 at University College London. The business shall be:

(i) the adoption of the Annual Report for 2009/10
(ii) the report of the Treasurer
(iii) appointment of Auditors
(iv) elections to Council and Nominating Committee
(v) presentation of certificates to LMS prizewinners

It is hoped that as many members as possible will be able to attend.

Fiona Nixon
Executive Secretary

LMS PRIZES 2011

Call for Nominations

The London Mathematical Society welcomes nominations for the 2011 prizes to recognise and celebrate the achievements in and contributions to all aspects of mathematics, including applied mathematics, mathematical physics and mathematical aspects of computer science.

In 2011 the LMS Council expects

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to award:

- The **Pólya Prize** in recognition of outstanding creativity in, imaginative exposition of, or distinguished contribution to, mathematics within the United Kingdom
- The **Senior Whitehead Prize** for work in, influence on or service to mathematics, or recognition of lecturing gifts in the field of mathematics
- The **Naylor Prize and Lectureship in Applied Mathematics** for work in, and influence on, and contributions to applied mathematics and/or the applications of mathematics, and lecturing gifts
- The **Berwick Prize** in recognition of an outstanding piece of mathematical research by an LMS member and actually published by the Society during the eight years ending on 31 December 2010
- The **Whitehead Prizes** for work in and influence on mathematics

The closing date for nominations is **Friday 14 January 2011**.

For further information and nomination forms, visit the LMS website (www.lms.ac.uk) or contact Elizabeth Fisher, Secretary to the Prizes Committee at the Society (tel: 020 7927 0807, email: prizes@lms.ac.uk).

LMS ANNUAL DINNER

The 2010 Annual Dinner will be held after the Annual General Meeting at 7.30 pm on Friday 19 November at The Russell Hotel, London WC1. The cost for members and their guests is £45 per person, which is for a three-course meal and wine. Members wishing to attend should make cheques payable to 'London Mathematical Society' and also indicate if they have any dietary requirements and send to: Leanne Marshall, London Mathematical Society, De Morgan House, 57–58 Russell Square, London WC1B 4HS. Payment should arrive by **Monday 8 November**. Any queries should be sent to leanne.marshall@lms.ac.uk.

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Editorial office: newsletter@lms.ac.uk; London Mathematical Society, De Morgan House, 57–58 Russell Square, London WC1B 4HS (t: 020 7637 3686; f: 020 7323 3655)

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

General Editor: Mr A.J.S. Mann (a.mann@gre.ac.uk)
Reports Editor: Dr S.A. Huggett (s.huggett@plymouth.ac.uk)
Reviews Editor: Dr C.M. Roney-Dougal (colva@mcs.st-and.ac.uk)
Administrative Editor: S.M. Oakes (newsletter@lms.ac.uk)

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Charity registration number: 252660.

LONDON MATHEMATICAL SOCIETY

ANNUAL GENERAL MEETING AND NAYLOR LECTURE

Friday 19 November 2010

Sir David Davies Lecture Theatre, University College London, Roberts Building, Torrington Place, WC1E 7JE

Programme:

3.15–3.30 Opening of the meeting
Annual General Meeting
LMS business, including Elections to Council and Nominating Committee and the presentation of certificates to the 2010 LMS prize winners

3.30–4.30 **Helen Byrne** (Nottingham)
Modelling Matters in Medicine and Biology

4.30–4.55 Tea

4.55–5.00 **Announcement of Election Results**

5.00–6.00 **Philip Maini** (Oxford)
2010 Naylor Lecture
Modelling Aspects of Solid Tumour Growth

Followed by a Reception at De Morgan House.

The Naylor Lecture is given by the winner of the 2009 Naylor Prize in Applied Mathematics.

There are funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Requests for support, and any other queries about the AGM, should be sent to Isabelle Robinson (isabelle.robinson@lms.ac.uk).

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ANNUAL LMS SUBSCRIPTION 2010–11

Members are reminded that their annual subscription, including payment for publications, for the period November 2010 – October 2011 is due on **1 November 2010**, and should be paid by **31 December 2010** at the latest. In the case of members who already have a Direct Debit set up, no action need be taken.

All members should now have received a reminder via email or letter, detailing how to pay their subscription. If you have not received a reminder, please contact the Membership Department (email: membership@lms.ac.uk; tel.: 020 7291 9973/7).

Rates

The annual subscription to the London Mathematical Society for 2010–11 is:

- Ordinary membership £51.50
- Concessions on Ordinary membership:
  - Reciprocity £25.75
  - Career break or part-time working £13.50
- Associate membership £13.50

Members also have the option to pay their European Mathematical Society subscription via the LMS (£23) and subscribe to the *Journal of the EMS* (£88).

The member prices of the Society's journals for 2011 are:

	Print	Online*	Print+Online*
Bulletin	£53.00	£42.00	£64.00
Journal	£101.00	£81.00	£121.00
Proceedings	£106.00	£85.00	£127.00
Nonlinearity	(except N. America) £72.00		(N. America) £93.00
JCM (electronic)	—	free	— (*inclusive of VAT)

Members now have the choice of taking an electronic subscription to the *Bulletin*, *Journal* or *Proceedings* of the LMS at a discount of 20% on the standard price for a print subscription. Alternatively, members may receive both the print and electronic versions for an additional 20% above the price of the print subscription. Once an order for an electronic version has been processed by the LMS, your email address will be passed to Oxford University Press who will contact you with details on how to access the journals.

Isabelle Robinson
Group Head (Society & Grants)

2010 SHAW PRIZE IN MATHEMATICAL SCIENCES

The Shaw Prize in Mathematical Sciences has been awarded to Jean Bourgain (Institute for Advanced Study, USA) for his profound work in mathematical analysis and its application to partial differential equations, mathematical physics, combinatorics, number theory, ergodic theory and theoretical computer science. For further information about the Shaw Prizes visit the website at www.shawprize.org.

The above item is taken from the 43rd issue of the IMU electronic newsletter *IMU Net* (see www.mathunion.org/IMU-Net).

BALZAN PRIZE FOR MATHEMATICS

Jacob Palis (Brazil), Federal University of Rio de Janeiro, National Institute of Pure and Applied Mathematics (IMPA), has been awarded the Balzan Prize for Mathematics (pure or applied) for "his fundamental contributions to the Mathematical Theory of Dynamical Systems". For more information about the prize winner and the International Balzan Foundation, visit www.balzan.org.

EUROPEAN CONGRESS OF MATHEMATICS

The *6th European Congress of Mathematics*, under the auspices of the European Mathematical Society, will take place in Kraków, Poland from 2 to 7 July 2012. For further information and to pre-register, visit the website at www.6ecm.pl.

LONDON MATHEMATICAL SOCIETY MEETING

Monday 6 December 2010

Institute of Geography, Drummond Street, University of Edinburgh

Speakers:

Yujiro Kawamata (Tokyo)
Yum-Tong Siu (Harvard)

The LMS Meeting will take place on the first day of the conference *Birational Geometry*, to be held at the Institute of Geography, University of Edinburgh, from 6 to 10 December. Further information can be found at www.maths.ed.ac.uk/cheltsov/shokurov/index.html.

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Contact Isabelle Robinson (isabelle.robinson@lms.ac.uk) for further information.

All are welcome to attend.

SET STUDENT OF THE YEAR AWARDS

The winners of the 2010 Science, Engineering & Technology Student of the Year Awards were announced at a ceremony in the London Hilton Hotel on 3 September. Record numbers of entries were received from every major university in the United Kingdom and Ireland, and judges paid tribute to the exceptional quality of this year's work. In all 45 students were shortlisted in fifteen different categories.

The Leadership Forum award for the best mathematics student of the year was given to Natalie Keating of Strathclyde University for her project on *How do Droplets Evaporate?*. Natalie's project takes a clear practical problem, translates it into mathematics and solves it. The LMS and IMA provided judges for the award, commenting that Natalie will make an excellent ambassador for mathematics and engineering, having demonstrated that her background in engineering allows her to appreciate mathematics in a broader STEM (Science, Technology, Engineering and Mathematics) context.

COLLINGWOOD MEMORIAL PRIZE

The 2010 Collingwood Memorial Prize has been awarded to Thomas D. Oliver, St Cuthbert's Society, University of Durham. The Collingwood Memorial Prize, established in memory of Sir Edward Collingwood, FRS, President of the London Mathematical Society 1969–70, is awarded to a final-year mathematics student at the University of Durham who intends to continue to a higher degree in mathematics at Durham or any other university.

Durham University

Reader/Lecturer in Pure Mathematics

Department of Mathematical Sciences: www.dur.ac.uk/mathematical.sciences

Web link: http://ig5.i-grasp.com/fe/tpl_durham01.asp

Closing date: 7 November 2010

The successful candidate will have an excellent research record in an area of Pure Mathematics. Preference may be given to candidates whose research areas are compatible with existing interests of the Pure Mathematics unit. The post holder will be expected to undertake and publish original research of the highest level, to contribute to the research activities of the Pure Mathematics research unit and of the department as a whole, and to undertake teaching and administrative duties as assigned by the Head of Department of Mathematical Sciences.

For appointment at Grade 8 candidates will need to provide evidence of relevant teaching experience at University level and a significant record of publications at international level.

For appointment as Reader candidates must have a substantial record of excellent publications at internationally leading level, experience with postgraduate supervision, and ideally substantial teaching experience at University level. A record of successful generation of external funding for research projects is highly desirable. We would especially welcome applications from holders of research fellowships.

Please note there are two positions available, at most one of which will be filled at Reader level.

Informal Contact details:

Professor John Parker	Email: j.r.parker@durham.ac.uk
Professor Victor Abrashkin	Email: victor.abrashkin@durham.ac.uk
Professor Michael Farber	Email: michael.farber@durham.ac.uk

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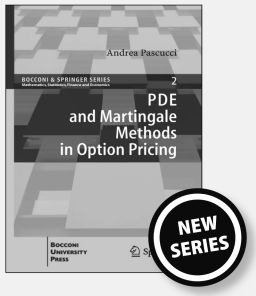

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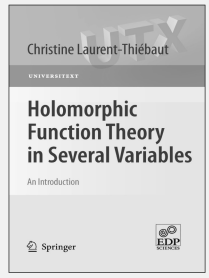

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U. Dierkes, S. Hildebrandt, F. Sauvigny, A. J. Tromba

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J. J. Callahan

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INSTITUT DES HAUTES ÉTUDES SCIENTIFIQUES

The Institut des Hautes Études Scientifiques (IHÉS), located in Bures-sur-Yvette (France), welcomes each year up to 250 mathematicians and theoretical physicists from all over the world for research periods ranging from two to three weeks up to one or two years.

Created in 1958, IHÉS is an international research institute, registered as a Foundation in the public interest since 1981. Its mission is to support and develop theoretical research in mathematical sciences, physics and more recently, at the interface with biology and medicine. Support for IHÉS comes from several sources: the French Ministry of Research, several European research agencies among which the Engineering and Physical Sciences Research Council (EPSRC), the US National Science Foundation, the Max-Planck-Gesellschaft, the Swiss National Science Foundation, and also some private foundations and companies.

EPSRC has been supporting IHÉS for a number of years, fostering closer links between British and French mathematical research centres. British mathematicians and theoretical physicists are invited to apply to IHÉS for visits (for more information, please go to www.ihes.fr). Their visit can be an opportunity to work with researchers from other research groups in the Paris area.

Director: Jean-Pierre Bourguignon

Permanent Professors: Thibault Damour, Mikhael Gromov, Maxim Kontsevich, Laurent Lafforgue, Nikita Nekrasov

Honorary Professor: David Ruelle

Léon Motchane Chair: Alain Connes

Louis Michel Chairs: Michael Douglas, Samson Shatashvili, Ali Chamseddine

Long-term CNRS visitors: Ofer Gabber, Dirk Kreimer, Christophe Soulé

External Members of the Scientific Council: George Papanicolaou, Gerd Faltings, Gabriele Veneziano, Bertrand Duplantier, Ray Goldstein

William Hodge Fellowships 2011/2012

In 2000 the EPSRC committee reviewing IHÉS suggested that the EPSRC and IHÉS offer each year two one-year fellowships bearing the name of Sir William Hodge, the eminent British mathematician. The fellowships enable outstanding young mathematicians and theoretical physicists to spend time at IHÉS. Fellows are encouraged to have a UK-based mentor and to be in contact with the UK mathematics community.

Applicants must have a PhD in Mathematical Sciences or Theoretical Physics obtained in 2009, 2010 or in early 2011. One of the two grants will be awarded to an applicant who has spent at least the preceding nine months at a UK academic institution or has just graduated from a UK institution. Applications will be reviewed and selection made based on the sole criterion of excellence in research by the IHÉS Scientific Council in December 2010. The Committee consists of the Permanent Professors, the Director, and the external members (the list can be found above). The fellowship would start in Autumn 2011.

Applications should be made on the IHÉS website (www.ihes.fr) and should include: the application form, a cover letter, a CV, a publication list, a research project, two or three letters of recommendation, and a proposal for a UK mentor.

Deadline for applications: **18 November 2010**.

For more information contact: IHÉS – 35, route de Chartres, F-91440 Bures-sur-Yvette, France, tel: +33 1 6092 6605, fax: +33 1 6092 6609, email: hodge@ihes.fr, website: www.ihes.fr.

LA GRANDE MÉDAILLE

The Académie des Sciences, Institut de France, has awarded the 2010 Grande Médaille to Sir Michael Atiyah, OM, FRS, FRSE. The Grande Médaille, created in 1997, is a distinction awarded annually, in rotation, in the relevant

disciplines of each division of the Academy, to a French or foreign scholar who has contributed to the development of science in a decisive way, both through the originality of his/her personal research and by his/her international presence and the stimulating influence which he/she will have had through the creation of a true school of research. The worked carried out will have concerned an important field of fundamental research and shed new light upon and brought about a greater understanding of the discipline in question. Some previous winners are:

2002 Richard L. Garwin (USA)
2003 David Sabatini (USA)
2004 David J. Gross (USA)
2005 Ronald M. Evans (USA)
2006 Peter Goldreich (USA)
2007 Tomas Hökfelt (Sweden)
2008 Susan Solomon (USA)
2009 Robert A. Weinberg (USA)

For further information about the Académie des Sciences visit the website at www.academie-sciences.fr.

MATHEMATICS POLICY ROUND UP

Comprehensive Spending Review

At the time of writing details of the government's Comprehensive Spending Review had not yet been published.

Cuts in the UK science budget

Business Secretary Vince Cable has unveiled plans for a cut in public funding for scientific research. In a speech at Queen Mary, University of London in September, Cable urged universities to do 'more for less' and said taxpayers should only back research that has a commercial use or was academically outstanding. He also suggested that universities find ways of earning money from research, including from business, so relying less on the state and taxpayers' money. A full transcript of the speech is available at www.bis.gov.uk/news.

Universities and scientists reacted to his assertion that only research that was commercially useful or academically outstanding should be funded. Royal Society President Lord Rees said: "It is crucial that short-term austerity should not undermine our science and innovation capacity." Imran Khan, Director of the Campaign for Science and Engineering, said: "It's depressing that in one of the most exciting scientific eras humanity has ever seen, Vince Cable had nothing exciting or inspiring to say about government policy in this area."

The Institute of Physics (IOP) has warned Chancellor George Osborne that a significant reduction in science funding could reduce investment in hi-tech research and development. IOP President Dame Jocelyn Bell Burnell called the proposed cuts – thought to be between 15% and 30% – 'disastrously short-sighted'.

The Royal Society of Chemistry (RSC) supported Cable in his decision to focus on excellent research. Dr Richard Pike, Chief Executive of the RSC, said "The current financial situation is clearly unsustainable and we must prioritise. The key question is the shape of Higher Education needed: what will this new system look like? We need to prioritise spending on areas where UK research is world class."

Losing science talent

John Krebs, Chair of the House of Lords Science and Technology Committee wrote to Science Minister David Willetts to warn that cuts in the government's science budget will lead to a brain drain of talent from the UK. Lord Krebs canvassed six leading research universities – Manchester, Oxford, Cambridge, Imperial College London, University College London and Edinburgh – and ascertained that several leading researchers had already lost scientists to overseas universities and warned that a cut in funding would raise 'significant risks' to the UK's scientific research base.

(Continued on the next page.)

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Cutting research units

A report by Universities UK – *The Future of Research* – says that to maintain excellence in UK science the government may have no choice but to reduce the number of research units it funds. The paper suggests a way 'to reduce the number of units supported by quality-related funding by a fifth by limiting QR funding to groups where more than 10% of the activity is rated at 4* and more than 25% is rated at 3* or above'. The report makes no firm proposals but rather outlines starting points for discussion. For further information visit www.universitiesuk.ac.uk.

Education report

The Organisation for Economic Cooperation and Development's (OECD) annual report has found that traditional 'big hitters' in higher education such as the UK and the US are losing their allure for international students. Five countries – Australia, France, Germany, the UK and the US – still hosted half of the world's overseas students in 2008. However, the US share of the market has fallen from 26% to 19% since 2000, while Russia, South Korea, Australia and New Zealand have gained ground. The UK market share fell by 2% in the same period. For further information visit www.oecd.org.

Trends in higher education over the past decade

Universities UK has published a report on *Patterns of higher education institutions in the UK*. This is the latest volume in a series of annual *Patterns* reports looking at trends in the higher-education sector over the past decade, from 1999/2000 to 2008/09. This edition also looks at trends in higher education among the different countries and regions of the UK. Some key points:

- Across the UK, undergraduate enrolments in higher education institutions have increased by more than 28 per cent overall in the 10-year period from 1999/2000 to 2008/09.
- From 1999/2000 to 2008/09 there was a downward trend in the proportion of men among students enrolled in higher education institutions.
- Female students are in the majority at all modes and levels, except for full-time postgraduates (who are dominated by non-UK students) where male students predominate.

For further information visit the website www.universitiesuk.ac.uk.

Royal Society Kavli Education Medal

The first ever Royal Society Kavli Education Award has been awarded to Professor Celia Hoyles from the London Knowledge Lab, Institute of Education, University of London. The selection committee recognised Professor Hoyles' "individual contribution to mathematics education at every stage in her career". As Chief Adviser for Mathematics to the UK Government, Professor Hoyles was "pivotal in raising the profile of mathematics within Whitehall, ensuring that rigorous research had a direct impact on policy development". The medal will be awarded biennially in recognition of a distinguished contribution made by an individual to science or mathematics education. Professor Hoyles will give a lecture and be awarded the medal by the President of the Royal Society at an event in January 2011.

International Review of Mathematical Sciences

This is a reminder that the Review takes place in December 2010. It is part of a series of international reviews organised by EPSRC (www.epsrc.ac.uk) in conjunction with learned societies and other key stakeholders to provide an independent assessment of the quality and impact of UK research. More information about the Review will appear in future editions of this *Newsletter*.

John Johnston
Mathematics Promotion Unit

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SCHOOL MATHEMATICS BRIEFING FOR MPs AND POLICY MAKERS

Public rhetoric in recent years indicates that mathematics is seen as important; and we have seen welcome increases in A-level entries and in undergraduate applications. There have also been markedly improved scores (on international comparisons) in Year 5. But there remain serious grounds for concern: performance in Year 9 remains inadequate; the 2007 National Curriculum is a mess, and, since QCDA is to be abolished, there is no clear mechanism for revising it; changes at GCSE are already causing problems at A-level; and the whole 16–19 scene seems to be up for grabs.

At the same time significant voices from unexpected directions have rediscovered the importance of teaching mathematics in a way that reflects the essence of the discipline. So it seemed desirable to try to arrange a meeting at which selected officials and politicians might learn of, and have a chance to discuss these developments.

The mathematical community does not at present have ways of regularly cultivating links with politicians, officials and those in other societies who influence policy. I therefore proposed to organise an independent meeting, and was delighted that Council agreed to provide a small sum, and to make De Morgan House available.

So on 15 September, 25–30 participants – including five MPs, five senior civil servants, five representatives of other societies, and the Chairs of the main mathematical groupings (ACME, NCETM, JMC) – enjoyed a stimulating morning exploring the nature of school mathematics. The emphasis was on discussion – stimulated by

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—Fernando Q. Gouvêa, *MAA Reviews*

"It is a brilliant idea to publish this strange and beguiling book with insightful mathematics for young and not so young people interested in the subject. My grandson, aged 10, is a talented artist and fascinated with science and mathematics. He is hooked on the book, saying it explains ideas so well and so easily."
—David Tall, Emeritus Professor in Mathematical Thinking
University of Warwick

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Paul Andrews (Cambridge), who showed video clips of continental classrooms (focusing on teaching linear equations); Anne Watson (Oxford), who explored the hidden subtlety of primary school concepts; and Tim Oates (Cambridge Assessment) who analysed how curriculum and assessment should interact.

For what it is worth, all five of the MPs and most of the officials have since expressed their appreciation. I am grateful to all who helped make this event possible; but it would be good if we could find regular ways of cultivating such evident sympathy and enthusiasm.

Tony Gardiner
University of Birmingham

INTEGRABLE DAY IN LOUGHBOROUGH

A half-day workshop on *Integrable Systems and Orthogonal Polynomials* will be held at Loughborough University on 26 November 2010. The speakers are:

- Yang Chen (Imperial) *Orthogonal polynomials, Painlevé equations and wireless communication*
- Martin Hallnäs (Loughborough) *Q-operators and multivariable special functions*
- Frank Nijhoff (Leeds) *Elliptic orthogonal polynomials and a higher-order generalization of the discrete-time Toda equation*
- Alexander Sergeev (Saratov, Russia) *Jacobi–Trudy and Giambelli formulae for generalised Schur polynomials*

The meeting is part of a collaborative workshop series on *Classical and Quantum Integrability* (http://tinyurl.com/3ajvfob) supported by an LMS grant, involving Edinburgh, Glasgow, Leeds and Loughborough Universities. Funds may be available to support the attendance of research students. Enquiries should be addressed to the organizer Sasha Veselov (A.P.Veselov@lboro.ac.uk or 01509 222866).

VISIT OF PROFESSOR E. TADMOR

Under the auspices of the North British Differential Equations Seminar, Professor Eitan Tadmor (University of Maryland) will be in the UK from 8 to 16 November 2010. He will give the following lectures:

- *Linear equations in critical regularity spaces: Hierarchical construction of their nonlinear solutions*, Tuesday 9 November at 3 pm, Maxwell Centre, Edinburgh
- *From particle to kinetic and hydrodynamic descriptions of flocking*, Thursday 11 November at 4 pm, School of Mathematics and Statistics, University of Glasgow
- *Entropy stable approximations of Navier–Stokes equations with no artificial numerical viscosity*, Friday 12 November at 3 pm, Frank Adams 1, Alan Turing Building, School of Mathematics, University of Manchester
- *Spectral dynamics and critical thresholds in nonlinear convection equations*, Monday 15 November at 3 pm, School of Mathematics, University of Leeds

For further information visit the website at www.maths.leeds.ac.uk/applied/NBDES.

VISIT OF PROFESSOR B. PARSHALL

Professor Brian Parshall (University of Virginia) will be visiting the UK from 6 to 13 November. His research interests are in representation theory. Professor Parshall will give seminars at:

- York University, Monday 8 November at 4.15 pm
- Manchester University, Tuesday 9 November at 4 pm
- Lancaster University, Friday 12 November at 4 pm

For further information contact Dr Paul Levy (p.d.levy@lancaster.ac.uk). The visit is supported by an LMS Scheme 2 grant.

LONDON MATHEMATICAL SOCIETY

MARY CARTWRIGHT MEETING

Friday 25 February 2011

Oxford University Museum of Natural History

Programme:

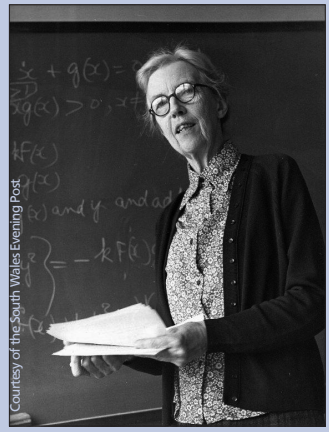
3.30 Opening of the meeting

Peter Donnelly (Oxford)
Modelling Genes

4.30 Tea

5.00 **Mary Cartwright Lecture**

Alison Etheridge (Oxford)
Evolution in a Spatial Continuum



Mary Cartwright

A reception will be held after the meeting at the Mathematics Institute followed by a dinner at the Ashmolean Museum at a cost of £30 per person, inclusive of wine. Contact Isabelle Robinson (isabelle.robinson@lms.ac.uk) by **18 February** if you would like to attend.

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

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Further details of these posts, together with information on application procedures, can be found via: www.hr.bham.ac.uk/jobs

Closing date: 12th November 2010. **Ref: 43606**

www.hr.bham.ac.uk/jobs

COMMITTED TO EQUALITY AND DIVERSITY.
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POSITIVE ABOUT DISABLED PEOPLE
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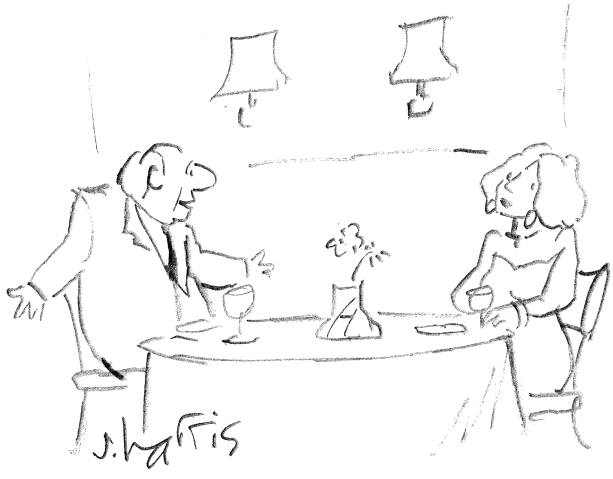
MEETING TO MARK THE RETIREMENT OF ROB CURTIS

There will be a meeting at the School of Mathematics, University of Birmingham on Wednesday 10 November 2010 to mark the retirement of Professor Robert Curtis. The talks will start at 2 pm and be given by:

- Peter Rowley (Manchester)
- Sergey Shpectorov (Birmingham)
- Rob Wilson (Queen Mary, London)

In the evening there will be a celebratory dinner. For more details visit the website at www.mat.bham.ac.uk/curtisret.shtml.

Rob Curtis is one of the five authors of *The Atlas of Finite Simple Groups* and is well known for his many significant contributions to finite group theory and especially to the understanding of the sporadic simple groups. Rob came to Birmingham in 1980 and has served as Head of School. His leadership in the School and nationally has been central in maintaining Birmingham's reputation as a leading mathematics department. Rob has been a dedicated member of the LMS since 1985 and served as LMS Librarian from 2002 to 2008. Rob will continue his research in the School as an Emeritus Professor.



"So I'm twice as old as you. Next year I won't be."

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STABLE HOMOTOPY, ALGEBRA AND NUMBER THEORY

A one-day workshop on *Stable Homotopy, Algebra and Number Theory* to mark the retirement of Francis Clarke will take place in the Seminar Room of the Department of Mathematics, Swansea University on Friday 26 November 2010. The speakers are:

- Sarah Whitehouse (Sheffield) *Gaussian polynomials and K-theory operations*
- Keith Johnson (Halifax) *Integer-valued polynomials and their topological applications*
- Nigel Ray (Manchester) *Thom complexes and their iterations*
- Andrew Baker (Glasgow) *Galois theory, classifying spaces and Lubin–Tate spectra*

There will be a dinner on Thursday 25 November 2010. For further information contact Martin Crossley (M.D.Crossley@swansea.ac.uk) by **15 November**. The workshop information is on the website at www-maths.swan.ac.uk/sac.

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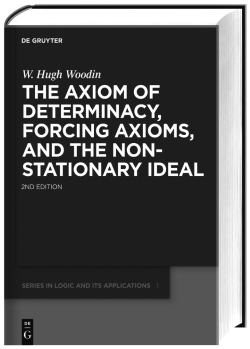
DE GRUYTER



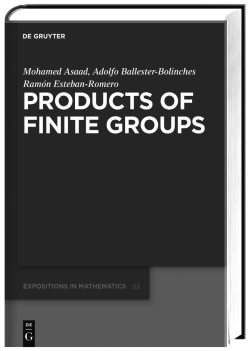
NEW EDITION

W. Hugh Woodin

THE AXIOM OF DETERMINACY, FORCING XIOMS, AND THE NONSTATIONARY IDEAL

2nd ed. 07/2010. vi, 852 pp.
Hc. RRP € [D] 149.95/*US$ 169.95. ISBN 978-3-11-019702-0
eBook RRP € 149.95/*US$ 169.95. ISBN 978-3-11-021317-1
De Gruyter Series in Logic and Its Applications

This monograph is directed to researchers and advanced graduate students in Set Theory. The second edition is updated to take into account some of the developments in the decade since the first edition appeared, this includes a revised discussion of Ω-logic and related matters.



Mohamed Asaad/Adolfo Ballester-Bolinches/ Ramon Esteban-Romero

PRODUCTS OF FINITE GROUPS

To be published October 2010. 320 pp.
Hc. RRP € [D] 109.95/*US$ 154.00. ISBN 978-3-11-020417-9
eBook RRP € 109.95/*US$ 154.00. ISBN 978-3-11-022061-2
De Gruyter Expositions in Mathematics 53

The study of finite groups factorised as a product of two or more subgroups has become a subject of great interest during the last years with applications not only in group theory, but also in other areas like cryptography and coding theory. The aim of this book is to gather, order, and examine part of this material, including the latest advances made, give some new approach to some topics, and present some new subjects of research in the theory of finite factorised groups.

*for orders placed in North America. Prices are subject to change. Prices do not include postage and handling. eBooks currently only available for libraries/ institutions.

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www.degruyter.com

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RECORDS OF PROCEEDINGS AT MEETINGS

REGIONAL ORDINARY MEETING

held on *6 September 2010* at the University of Nottingham. Around 30 members and visitors were present for all or part of the meeting.

The meeting began at 2.00 pm, with the President, Professor A.J. MACINTYRE, FRS, in the Chair.

One member signed the book and was admitted to the Society.

Dr J. ZACHARIAS introduced a lecture given by Professor Erik Christensen on *Applications of non-commutative geometry to the study of fractal sets*.

Dr Zacharias then introduced a lecture given by Professor Siegfried Echterhoff on *The classification of noncommutative 2-spheres*.

After tea, Dr Zacharias introduced a lecture given by Professor Ilijas Farah on *The complexity of the classification problem of nuclear C*-algebras*.

The Chair expressed the thanks of the Society to the local organisers and the speakers for putting on such an excellent meeting.

After the meeting a dinner was held at the Hemsley Restaurant on the campus.

C*-ALGEBRAS AND THEIR CLASSIFICATION

Report

The LMS Midlands Regional Meeting 2010 took place on Monday 6 September with three distinguished speakers (Christensen, Echterhoff and Farah) and was followed by a four-day workshop on *C*-Algebras and their Classification.* All these events took place at the School of Mathematical Sciences, University of Nottingham and were supported by the London Mathematical Society and EPSRC. About 60 people attended.

The structure theory of nuclear C*-algebras has seen dramatic advances in recent years. Most notably, tight links have been discovered between topological and algebraic regularity properties of C*-algebras. These results have spurred new and very broad classification theorems, with particularly satisfying applications to transformation group C*-algebras. They have also opened connections to other areas such as graph algebras or coarse geometry; these connections are waiting to be further explored. The area is extremely vivid, as reflected by the large number of well-synchronized recent and upcoming events (in Oberwolfach, Banff, Toronto, Copenhagen, Münster, Barcelona, Palo Alto, to name but a few). It is particularly attractive for early career researchers, as the theory is well-developed yet highly active, with many open questions which are interesting yet accessible (even at postgraduate level). The LMS meeting and subsequent workshop helped to promote this exciting area of research in the UK. Many international experts attended and numerous participants from the UK were attracted.

Invited speakers included Nate Brown (Penn State), Erik Christensen (Copenhagen), Siegfried Echterhoff (Münster), Mikael Rørdam

(Copenhagen), Joachim Cuntz (Münster), Marius Dadarlat (Purdue), Søren Eilers (Copenhagen), George Elliott (Toronto), Ilias Farah (Toronto), Ilan Hirshberg (Be'er Sheva), Takeshi Katsura (Yokohama), David Kerr (Texas), Eberhard Kirchberg (Berlin), Martin Mathieu (Belfast), Ping Wong Ng (Louisiana), Francesc Perera (Barcelona), Chris Phillips (Eugene), Jean Renault (Orleans), Allan Sinclair (Edinburgh), Adam Skalski (Lancaster), Andrew Toms (Toronto), Simon Wassermann (Glasgow) and Stuart White (Glasgow).

We thank the LMS for its generous support which made this event possible.

Wilhelm Winter and Joachim Zacharias
School of Mathematical Sciences
University of Nottingham

HARMONIC ANALYSIS AND PDE RESEARCH NETWORK

Report

A workshop was held at the Instituto de Ciencias Matemáticas (ICMAT) from 16 to 17 September 2010 to mark the inclusion of the Universidad Autónoma de Madrid in the LMS Scheme 3 Harmonic Analysis and PDE research network.

The meeting brought together British and Spanish mathematicians working in harmonic analysis and closely related areas such as dispersive PDE, inverse problems and geometric measure theory. The talks of the six speakers, Neal Bez (Birmingham), Tony Carbery (Edinburgh), Piero D'Ancona (Rome), Thomas Duyckaerts (Paris), Malabika Pramanik (Vancouver) and Xavier Tolsa (Barcelona), reflected a number of current and emerging themes in the subject. Highlights included discussions on finite field analogues of central open problems in euclidean harmonic analysis (such as Kakeya-type conjectures), sharp Strichartz estimates for linear and nonlinear Schrödinger equations, and variation bounds in the setting of singular integrals on Lipschitz domains.

The event was a great success and attracted over 50 participants. The workshop was followed by drinks and a lively dinner at a Galician restaurant in central Madrid. This event was organised by Keith Rogers (ICMAT) and Ana Vargas (UAM) with generous additional support from the Spanish Ministerio de Ciencia e Innovación.

There will be a further workshop in Birmingham from 25 to 26 November 2010 (for details see the notice on the next page).

Jon Bennett
University of Birmingham

Participants in the LMS network meeting in Madrid

HARMONIC ANALYSIS AND PDE WORKSHOP

This workshop is a two-day meeting of the LMS *Harmonic Analysis and PDEs Network* which will take place at the University of Birmingham. There will be two talks in the afternoon of Thursday 25 November and two talks in the morning of Friday 26 November 2010. The speakers are:

- José Carrillo (Barcelona)
- Javier Duoandikoetxea (Bilbao)
- Sebastian Herr (Bonn)
- Neil Lyall (Georgia, USA)

There will be an informal dinner in the city on the Thursday evening. For further information see http://tinyurl.com/37usbu4 or contact Jonathan Bennett (J.Bennett@bham.ac.uk). All interested persons are welcome to attend. The workshop is funded in part by an LMS Scheme 3 grant and the Birmingham Mathematical Institute.

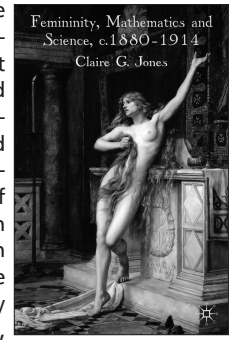
REVIEWS

Femininity, Mathematics and Science, 1880–1914 by Claire G. Jones, 2009, Palgrave Macmillan, 280 pp, £55.00, ISBN 978-0-230-55521-1.

The title of this book reminded me of a dinner which occurred shortly after my arrival in Cambridge. I was sitting beside the wife of an eminent mathematician. On discovering I was also a mathematician she offered the following advice: I should never ignore my femininity. "So many female mathematicians do!" she declared. Although taken aback, I did, at some level, understand her. To exist in a man's world women often play down their femininity. However the opposite also occurs, and women are known to become more feminine in such an environment. What seems true is that it is difficult to just be oneself. This book is not just about being a woman in a man's world, it is about whether being a mathematician is a suitable career for a woman at all.

The author considers two case studies: one is Grace Chisholm Young (1868–1944), the other is Hertha Ayrton (1854–1923). Both studied mathematics at Cambridge, then Grace continued to work in pure mathematics whilst Hertha became involved in engineering.

The Cambridge mathematical tripos was of key importance in the fight for suffrage. Heralded as "*the* prestige degree for men", it was important for the movement that women succeeded in the tripos. However, "Towards the end of the century the examination lost much of its prestige ... due (in part) to [a] recognition that women were able to compete successfully alongside the men and, in some cases, surpass even the best of them".



With the usual options not open to them after graduation, Grace and Hertha had to pave their own way. Grace was awarded a doctorate from the University of Göttingen but then her career stalled. Hertha studied at the City and Guilds Technical Institute at Finsbury, one of three women out of the 118 men.

Ultimately both women married men in their fields. The working relationship between Grace and her husband was both practical and clearly unfair. Needing at least one of them to hold an academic position for financial reasons, they often submitted under only his name, thus promoting him (and demoting her). That they chose to pursue his career over hers was clearly a gender choice, as until then her career had looked more promising.

Hertha's husband William Ayrton had already been elected a Royal Society Fellow when they married. They were well aware of the "gendered interpretations given to collaborations of differing sex" and thus denied "any hint of collaboration or collusion in their work". However, they did in fact work closely together. The author

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Heilbronn Research Fellows

£33,600 - £43,840 (to be agreed)

The Department of Mathematics invites applications for a number of Research Fellowships in Mathematics in association with the Heilbronn Insitute for Mathematical Research. Research areas of interest include but are not restricted to number theory, algebraic geometry, combinatorics, probability, quantum algorithms and data mining. Preference on this occasion may be given to Combinatorics, Probability and Data Mining.

The Fellowships will be for three years, with a preferred start date in September 2011. You will divide your time equally between your own research and the research programme of the Heilbronn Institute. Due to the nature of the Heilbronn Institute's work, you must satisfy vetting before appointment. UK resident UK nationals will normally be able to meet this condition: other potential applicants should consult the Director about their eligibility before applying. You may become a member of the USS pension scheme. Research expenses of at least £2,000 per annum will also be available.

Enquiries about the fellowships may be addressed to Professor Trevor Wooley, School of Mathematics, telephone +44 (0)117 331 5240, email: assoc-director-himr@bristol.ac.uk and enquiries about the work of the Heilbronn Institute may be addressed to the Director of the Institute, Professor Malcolm MacCallum, telephone +44 (0)117 980 6303, e-mail: m.a.h.maccallum@bristol.ac.uk

Further details and an application form can be found at www.bristol.ac.uk/jobs Alternatively you can telephone +44 (0)117 954 6947 or e-mail recruitment@bristol.ac.uk quoting reference 15676.

The closing date for applications is 9.00am, 15 December 2010.

EXCELLENCE THROUGH DIVERSITY

University of BRISTOL

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comments that "Recent scholars have shown how women were inevitably assigned the role of 'assistant' in both-sex collaborations, whatever [their] contributions.".

The sheer practicalities of laboratory work made it incredibly hard for women to pursue scientific careers. After Ayrton's death, Hertha found it impossible to find professional laboratory space and was forced to work in a makeshift laboratory in her house. However "Hertha's laboratory lacked credibility ... at a time when increasing emphasis was being placed on precise measurement and the use of manufactured instrumentation." On the contrary, the rather genteel pursuit of pure mathematics research makes it quite a respectable pass-time for women: certainly Grace had a much easier time integrating into academic society. But the image of a lone mathematical genius is not readily reconciled with femininity and this, subconsciously or otherwise, works against the female mathematician; certainly then, but maybe still?

It is impossible not to make modern comparisons. Huge advances have been made, and Herbert Spencer, who believed "that female ... *intellectual* evolution [stops] before man's in order to preserve vital organs for childbirth" would nowadays be deemed certifiable. However, I believe Grace and Hertha would be saddened by today's situation: the small numbers of women in academic positions in mathematics and engineering, and the even smaller numbers in positions of power: professors, editors of journals etc. "What would Hertha Ayrton, who nearly achieved 'FRS' after her name in 1902, make of the fact that women are still a tiny minority within the Royal Society,... hovering around just 5%." Even the leaps forward in female undergraduate numbers seem to be reversing, as a *Guardian* article (13.07.10) illustrates: "Women still favour 'feminine' subjects ... over engineering, sciences and mathematics, despite efforts to change this. Why?". The discussion rages on, and this book makes an interesting and valuable contribution.

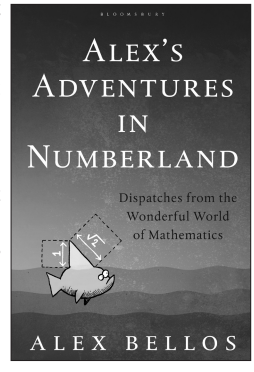
Rachel Camina
Cambridge University

Alex's Adventures in Numberland by Alex Bellos, 2010, Bloomsbury, 448 pp, £18.99, ISBN 978-0-747-59716-2.

This is an excellently researched and well-written book that distinguishes itself from the body of popular science books by interspersing and motivating the mathematics it contains using stories, interviews and conversations with a variety of people, ranging from mathematicians and linguists to mystics. The result is a mixture of journalism, travel literature and mathematical history that will have a much wider appeal than many other accessible texts on mathematics.

I must admit that my heart sank after reading the first page of Chapter Zero, where Bellos describes an Amazonian tribe only capable of counting to 5 (didn't I once read another book that started like this? See Gamow, *One, two, three – infinity*). However my initial scepticism was fairly swiftly beaten down: it is included not as a gimmick but because it is the research topic of one of his interview subjects, and the chapter grows into a discussion on our perception of numbers and quantities.

After the "pre-mathematics" of Chapter Zero, there are eleven chapters touching on a selection of topics, chosen not to present a wide spectrum but to provide glimpses into Numberland and (perhaps more importantly) how it can be related to everyday life. There is a lot in the first four or five chapters on number systems, counting and methods for basic arithmetic, while the later chapters tackle slightly more advanced material such as probability and countability.



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However, the mathematics never gets very complicated – the nearest we ever get to formal mathematics has been consigned to the appendices. This is no bad thing: Bellos isn't trying to teach mathematics, but "to communicate the excitement and wonder of mathematical discovery", and in this he does an excellent job. Bellos' own enthusiasm for mathematics is clear throughout, for example in Chapter Ten he ritually buys and weighs baguettes for 100 days solely to introduce the normal distribution.

Besides the mathematics, the other major aspect of the book are the people he meets. This is a fine idea – it transforms the book into a travelogue which seems to suit the popular mathematics genre very well. One of his stated aims is "to show that mathematicians are funny", which I don't think is really necessary and in any case I don't believe it. As it turns out, most of the eccentric people he meets are not professional mathematicians but "numerically obsessed lay-people" seeking magic or mysticism in numbers, or the golden ratio in everyday objects, or who are Zen masters of business card origami. Incidentally, I was surprised to learn that business card origami "is a winning way [...] to hand over your business card during mathematics conferences."

Still, the interviews are entertaining and complement the mathematics very well. Moreover, the people he meets are passionate about mathematics, and Bellos does an excellent job of describing this passion in a way that will not be lost on a general audience. Coupled with the numerous interesting facts and slices of history that appear throughout the book, this is a worthy newcomer to the popular science bookshelf.

Robert Brignall
The Open University

ZITO THE MAGICIAN

To amuse His Royal Majesty he will change water into wine.
Frogs into footmen. Beetles into bailiffs. And make a Minister
out of a rat. He bows, and daisies grow from his finger-tips.
And a talking bird sits on his shoulder.
There.
Think up something else, demands His Royal Majesty.
Think up a black star. So he thinks up a black star.
Think up dry water. So he thinks up dry water.
Think up a river bound with straw-bands. So he does.
There.
Then along comes a student and asks: Think up sine alpha greater than one.
And Zito grows pale and sad. Terribly sorry. Sine is
Between plus one and minus one. Nothing you can do about that.
And he leaves the great royal empire, quietly weaves his way
Through the throng of courtiers, to his home in a nutshell.

Miroslav Holub (Czech)
Translated by George Theiner

From *Poems Before & After: Collected English Translations*, 1991, Bloodaxe Books, 274 pp, ISBN 978-1-852-24122-3. Reproduced with kind permission from the publisher.

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 of meetings and events is given on the Society's website (www.lms.ac.uk/newsletter/calendar.html).

Please send updates and corrections to calendar@lms.ac.uk.

NOVEMBER 2010

10 Meeting to Mark the Retirement of Rob Curtis, Birmingham (397)
13-14 MathsJam, Yarnfield Park Training Centre, Staffordshire (396)
16 BCS-FACS Evening Seminar, London (396)
19 LMS Annual General Meeting, Naylor Lecture, London (397)
25-26 Harmonic Analysis and PDE Network, Birmingham (397)
26 Stable Homotopy, Algebra and Number Theory Workshop, Swansea (397)
26 Integrable Systems and Orthogonal Polynomials Workshop, Loughborough (397)

DECEMBER 2010

6 LMS Meeting, ICMS, Edinburgh (397)
6-10 Birational Geometry, ICMS Workshop, Edinburgh (396)
6-10 Uncertainty in Climate Modelling, INI, Cambridge (395)
6-10 Australian Statistical Conference 2010, Fremantle, Australia (383)
13-17 PDE Models for Quantum Fluids, INI, Cambridge (395)
18-20 New Trends in Spectral Theory and Applications Workshop, Cardiff (395)

JANUARY 2011

5-14 School on Moduli Spaces, INI, Cambridge (395)
10-13 UK–Japan Winter School, King's College London (396)
10-14 Embeddings, INI, Cambridge (395)
10-14 Torsors: Theory and Application, ICMS Workshop, Edinburgh (394)

FEBRUARY 2011

14-16 Workshop on Mathematics Journals, MSRI, Berkeley, USA
25 LMS Mary Cartwright Lecture, Oxford (397)

MARCH 2011

14-18 Representations of Surface Groups and Higgs Bundles Workshop, Oxford

APRIL 2011

4-5 Nonlinear Waves and Solitons on Lattices Workshop, ICMS, Edinburgh
4-8 Computational Challenges in Partial Differential Equations Meeting, Swansea (392)
11-13 BAMC 2011, Birmingham
18-21 BMC 2011, Leicester
25-29 The Kervaire Invariant and Stable Homotopy Theory, ICMS Workshop, Edinburgh (394)

MAY 2011

6 Women in Mathematics Day, London
17 LMS–Gresham Lecture, London
22-27 Progress on Difference Equations 2011, Dublin

JUNE 2011

6-8 Nonlinear Diffusion: Algorithms, Analysis and Applications Workshop, Warwick (395)
6-10 Oscillatory Integrals in Harmonic Analysis, ICMS Workshop, Edinburgh (394)
26-30 Signal Processing with Adaptive Sparse Structured Representations ICMS Workshop, Edinburgh (394)
26-30 New Developments in Non-Commutative Algebra and Applications ICMS Workshop, Skye (394)

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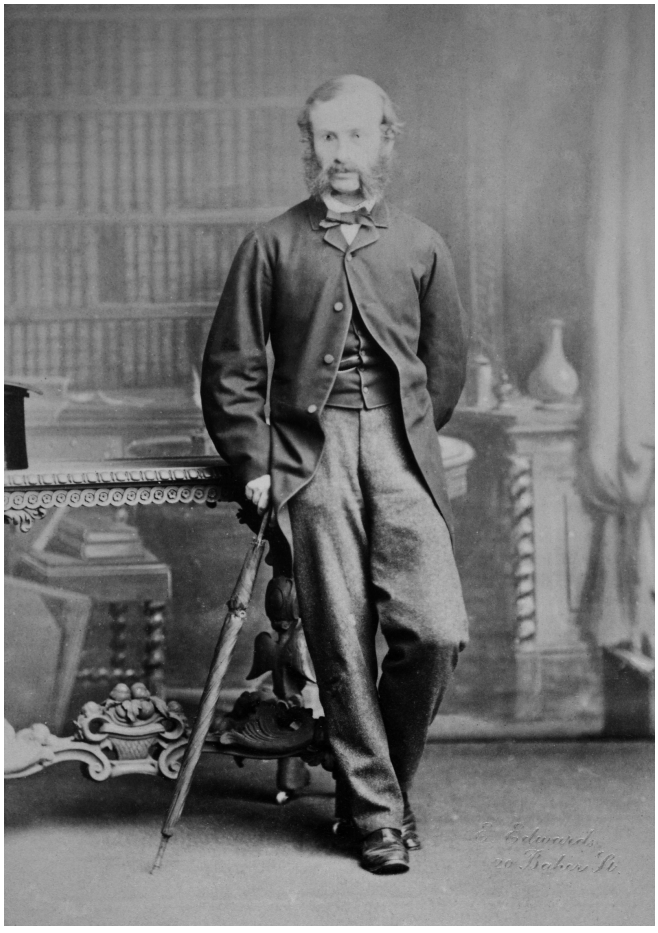
E.J. ROUTH

LMS member 1865–1906



Ernest Edwards, 20 Baker St, London W.

Edward John Routh, MA, FRS, FRAS, FGS, FCPS
Assistant Tutor and Fellow of Peterhouse College, Cambridge
Founder LMS member; LMS Council 1888