THE LONDON MATHEMATICAL SOCIETY

NEWSLETTER

No. 360 June 2007

Forthcoming Society Meetings

2007

Friday 22 June
London
A. Macintyre
H. Woodin
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Wednesday 24 October
Northern Regional Meeting
Sheffield
L. Breen
A. Cattaneo

Friday 23 November
AGM, London
M. Struwe
J.F. Toland
Presidential Address

2008

Friday 8 February
Mary Cartwright Lecture

IMA–LMS NEXT STEPS INITIATIVE

Notes from the meeting held on 26 March 2007

This was a meeting where the Joint Planning Group got to grips with many of the matters that need to be sorted out if there is to be a merger between the two Societies. A number of draft papers were considered and guidelines agreed for further development by the respective drafting subgroups.

Vision and Mission

The revised Vision statement provoked a brief debate, which revealed that some considered the draft too long while others considered the length appropriate. It was remitted for further consideration.

The draft Mission statement had only partly succeeded in combining two different writing styles, with an inelegant result. The present draft has five main headings, identifying distinct areas of activity, and these were felt to be satisfactory. The first, which it was agreed could be considered to be in final form, reads 'To promote, support and advance mathematical research and the applications of mathematics'. Each heading is followed by bullet points by way of expansion, and it was agreed that these bullet points needed thorough re-working, both to improve flow and to achieve a consistent level of explanation.

Constitution Charter

The Constitution document, to be drafted presently, should aim to sketch out concepts rather than define all the detail needed. The resulting Charter would be enabling rather than detailed.

Officers and Constituencies

Work is proceeding on the basis that there will be seven Honorary Officers: President, Treasurer, General Secretary and four Vice-Presidents, the latter each to head a 'Constituency' and chair an associated 'Constituency Committee'. The Constituencies would represent activity areas rather than defined groups of members from particular sectors. The four Constituencies might comprise Learned Activities, Professional Activities, Education, and External Policy and Promotion.

Council

The present draft composition of the new Society's Council is made up of the 7 Officers, two members nominated by each of

the four Constituency Committees, 7 General Members and up to three Co-opted Members. The 8 members proposed by the Constituency Committees could be, but need not necessarily be, members of the relevant Committee. The General Members would be proposed for election by a Nominating Committee.

The merits of elections to Council being contested elections, by the nomination of more candidates than places, were agreed. Officers, however, might be returned unopposed. In any case, for all posts on Council (including all Officers) candidates could be proposed by the membership to stand against those proposed by Constituency Committees or a Nominating Committee. The Nominating and Constituency Committees should publicise a 'slate' of candidates sufficiently in advance of the election so that members would be able to propose alternative candidates, having seen the preliminary list. All candidates' details would then be circulated on or with the ballot paper. (Alternative candidates could not be proposed 'on the fly' during the election.)

All elections should be by Single Transferable Vote, and if possible allow electronic voting as an alternative to paper.

Committees

It was agreed that there would be other activity-based Committees (e.g. Finance, Property, Membership) in addition to the Constituency Committees. There would also be committees such as Prizes Committee whose work touched the areas of activity of several Constituency Committees. The four key Constituency Committees should be empowered by Council to operate within a defined budget within a broad strategy.

Nominating Committee

The meeting agreed that for the Constitution paper all that was necessary could be covered by the phrase 'Council shall the power to establish a Nominating Committee'. There was limited discussion only about the form of the Nominating Committee. Generally the selected model should not be open to abuse by a self-perpetuating clique.

LMS Newsletter

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Public Benefit

The meeting noted that it was essential that the new Society should be a charity, in order that the existing charitable Societies would be able to assign their reserves to it.

Under the new Charities Act, 'public benefit' will have to be demonstrated. It was agreed that a table of 'benefits' should be produced to illustrate how the present envelope of activities of the Societies results in public benefit. For the research support activity, for example, the emphasis would be on the outcome, advancing mathematics for the benefit of the public, rather than on the means, making grants to individuals.

There was a debate concerning the reasonableness of charges made for services, in particular revenue from the sales of journals that supported the activities of the Societies. Both Societies work with OUP, and recent information indicates that OUP journals are, in many sectors, less expensive than market norms (in terms of pages and citations). On the requirement that 'individuals on low income must be able to benefit' the position should be, at least until challenged, that this would be met by library access.

The meeting also considered public benefit aspects that related to membership. The new climate for charities could militate against a 'proposed and seconded' route to membership, which could be seen to depend on personal networks. It was anticipated that in future membership would instead need to be linked to qualifications.

Support for Research

The meeting had before it a full description of the two Societies' current activities in support of research, and agreed that this should be developed to summarise how a single Society would operate in these areas. In describing the remit, the meeting preferred 'mathematics and the applications of mathematics in the broadest sense' to the present 'Pure and Applied Mathematics in their broadest sense'.

It was agreed that the heading 'Meetings Conferences and Lectures' should be broken into two headings: 'Meetings and Lectures' and 'Conferences'. The document should state 'that the new Society would organise conferences in accordance with the strategy set by the new Council'. The meeting agreed that more emphasis should be given to 'small meetings'. It was also agreed that grants could not be available only to members.

Communication

This theme was agreed to cover communicating with members, the general public, the media, and other scientific bodies and opinion formers, but to exclude learned journals and books (which fall under 'Publications', to be considered at a future date). The meeting considered a paper setting out the present activities of the two Societies, and various new ideas of interest. It was noted that the cost implications of the latter would have to be considered.

It was noted that the new Society would need to work differently with organisations that had responsibility for funding UK mathematics (DTI, EPSRC, HEFCE, and DfES). More thought should therefore be given to how the benefits of mathematics should be communicated to policy makers.

It was noted that the dynamic with CMS would change considerably if the LMS and the IMA formed a new single Society and the Edinburgh Mathematical Society and the Operational Research Society were to become full members of CMS.

Fellow Grade

The meeting agreed that there would be benefits of the Fellowship grade to mathematicians working outside academia.

After a full discussion the meeting decided to support a 'Fellow' grade.

Charles Evans (IMA)
Charles Goldie (LMS)

Comments sought

As described above, the NSI group is developing a model that if implemented would lead to the replacement of both the Institute of Mathematics and its Applications and the London Mathematical Society by a new society.

As this work progresses, members are invited to send views directly to the NSI group and can be assured that all comments received will be brought to the attention of the group at its next meeting. Although the NSI group does not guarantee to reply to all messages it may on occasion choose to do so. The email address to use is nsicontact@btinternet.com.

PAUL JOSEPH COHEN

Paul Joseph Cohen, Emeritus Professor of Mathematics at Stanford and a 1966 Fields Medallist, died unexpectedly on 23 March 2007 of interstitial lung disease. He was elected Honorary member of the LMS in 1973. He was a member of the US National Academy, and a recipient of the US National Medal of Science (1967).

Cohen became world famous in 1963, when he was 29, with his proof that Cantor's continuum hypothesis CH cannot be proved in the standard axiomatic set theory ZFC of Zermelo-Fraenkel (unless ZFC is inconsistent). This complemented Godel's result of 1938 that CH cannot be refuted in ZFC (unless ZFC is inconsistent). Cohen's method of forcing, for constructing models by adding elements 'generically' to a (countable) model of set theory, has proved enormously flexible and powerful. Over 40 years the method has clarified the status, over ZFC, of many significant principles of set theory, topology, analysis and algebra. Moreover, it has proved valuable quite outside independence theory.

A dramatic aspect of the CH work is that Cohen was a self-taught outsider in logic. His work on set theory and *p*-adic fields has a very characteristic style, combinatorial and rather free of general theory.

Prior to 1963, Cohen had established a major reputation in harmonic analysis. His 1960 work on idempotent measures won the 1964 Bôcher Prize. In 1969 Cohen published a highly original paper on *p*-adic cell decomposition, giving a constructive version of the famous results of Ax-Kochen-Ersov. It is now fundamental for logical analysis of motivic integration. From 1969 on Cohen devoted himself to some of the most challenging and unyielding problems, such as the Riemann Hypothesis. He was a passionate and inspiring mathematician. The September 2006 celebration at Stanford brought together (as his former student Peter Sarnak said) people from subjects that rarely interact. On this occasion they came together naturally, to honour a truly unique mathematician, whose work had inspired them all.

Cohen's origins were humble. He was born in Long Branch, New Jersey on 2 April 1934, into a Polish immigrant family. He was an early developer in mathematics. He left Brooklyn College after three years, without a degree, going directly to graduate study at Chicago, under Zygmund. He graduated PhD in 1958 with a thesis on trigonometric series. He was part of a particularly illustrious group of graduate students at Chicago, among them John Thompson, another Fields Medallist. He had positions at Rochester, MIT and IAS before going in 1961 to Stanford, where he spent the rest of his life.

Cohen married Christina Karls from Sweden in 1963. He is survived by Christina and their three sons, Eric, Steven and Charles.

A.J. Macintyre
Queen Mary, University of London

ROYAL SOCIETY OF EDINBURGH

Gavin Brown, Vice-Chancellor and Principal of the University of Sydney, has been elected a Corresponding Fellow of the Royal Society of Edinburgh.

LONDON MATHEMATICAL SOCIETY

Friday 22 June 2007

Chemistry Auditorium, Christopher Ingold Building,
University College London, 20 Gordon Street, London WC1

3.30 – 4.45 **LMS business** (see below)
A. Macintyre (Queen Mary, London)
Current p-adic model theory and its debt to Paul Cohen

4.45 – 5.15 **Tea**

5.15 – 6.15 **H. Woodin** (Berkeley)
Current set theory and its debt to Paul Cohen

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, including an estimate of expenses, may be addressed to the Programme Secretary at the Society (web: www.lms.ac.uk; email: grants@lms.ac.uk).

A reception will be held at De Morgan House at 6.30 pm with a dinner afterwards at the Il Fornello Restaurant, 150 Southampton Row, London WC1 at 7.30 pm. The cost will be £26.00 per person, inclusive of wine. Those wishing to attend should inform Susan Oakes (susan.oakes@lms.ac.uk) no later than **Monday 18 June**.

GENERAL MEETING

There will be a General Meeting of the Society at 3.30 pm on Friday 22 June 2007, to be held at University College London. The business shall be:

(i) the appointment of Scrutineers;
(ii) announcement of Council's recommendation for Honorary Membership;
(iii) announcement of Prize winners for 2007.

I hope that as many members as possible will be able to attend.

Peter Cooper
Executive Secretary

RAMANUJAN PRIZE 2007

The Abdus Salam International Centre for Theoretical Physics (ICTP) is pleased to invite nominations for the 2007 Ramanujan Prize for young mathematicians from developing countries. The Prize is funded by the Niels Henrik Abel Memorial Fund. The Prize carries a $10,000 cash award and an allowance to visit ICTP for a meeting where the Prize winner will be required to deliver a lecture. The deadline for receipt of nominations is **31 July 2007**.

The 2005 Prize was awarded to Professor Marcelo A. Viana from IMPA, Brazil. The 2006 Prize was awarded to Professor Ramdorai Sujatha, Tata Institute of Fundamental Research, Mumbai, India. Please send nominations to director@ictp.trieste.it describing the work of the nominee in adequate detail. Two supporting letters should also be arranged.

MATHEMATICAL SOCIETY OF JAPAN

Professor Kenji Yajima has been elected as President of the Mathematical Society of Japan, as the successor to Professor Sadayoshi Kojima.

EUROPEAN MATHEMATICAL SOCIETY PRIZES

The European Mathematical Society has issued a call for nominations for its prizes to be awarded at the 2008 European Congress of Mathematics. Ten prizes are to be awarded to European mathematicians who have not reached their 35th birthday on 30 June 2008, although the maximum age may be increased by up to three years in the case of an individual with a broken career pattern. Mathematicians are defined to be 'European' if they are of European nationality or their normal place of work is within Europe. The Prizes are to be awarded for work published before 31 December 2007. The nomination for each award must be accompanied by a written justification, a résumé and a citation of about 100 words that can be read at the award ceremony.

The award comprises a certificate including the citation and a cash prize of €5000. Ari Laptev, EMS President, writes: "to receive such a prize is not only an honour for the person himself, but also for his country." For further information contact the chairman of the Prize Committee, Professor R. Tijdeman by email: tijdemon@math.leidenuniv.nl or by telephone: +31715277138. The deadline for nominations is **1 November 2007**.

TRANSLATION AWARDS

Funding for Mathematicians

The Wellcome Trust is the leading UK funder of translation research. The Trust seeks to maximise the impact of research innovation on health by facilitating the development of early-stage technologies to a point at which they can be developed by the market. Translation Awards fund projects covering any aspect of technology development from a range of disciplines, including mathematical and computational sciences, as long as the project addresses an unmet need in healthcare.

Projects funded by Translation Awards address a wide range of potential applications, including therapeutics, vaccines, diagnostics, enabling technologies, medical devices and regenerative medicine. If you have a new technology, but it is too early or too high-risk to attract commercial partners, the Translation Award schemes could be the key to turning your innovation into a commercial reality.

The award schemes are open to researchers from both academic institutions (universities and research institutions) and early-stage companies. For further information either visit the website: www.wellcome.ac.uk/funding/technologytransfer, email: techtransfer@wellcome.ac.uk or telephone 020 7611 8202.

MATHEMATICS POLICY ROUNDUP

The House of Commons Education and Skills Committee released its report on The Bologna Process on 30 April. The report emphasised that the aim of the Process was to create comparability and compatibility – rather than homogenisation – of higher education systems across a European Higher Education Area. There was concern that the current limit of 75 credits for each calendar year would mean that MMath-type integrated masters and one year masters courses would not earn sufficient credits to be considered a second cycle qualification. The Select Committee called for the government to seek a commitment from the European Commission for this cap to be removed. Many of the organisations who submitted evidence, including the Council for the Mathematical Sciences (CMS), also commented on the lack of funding for second-cycle qualifications. For a full report see the education and skills committee page at www.parliament.uk.

A report commissioned by the CMS which looks into the need for a policy on regional higher education provision in mathematics is now complete. Report author Professor Nigel Steele, LMS member and council member of the IMA, found that national provision of mathematical sciences courses was reasonable, but warned steps should be taken on a sub-regional level to ensure high quality honours degree courses are available following good, though not necessarily outstanding, A-level performance. He noted a bleak situation in eastern England, Wales and in the central and western parts of southern England. The report will be released to coincide with a meeting scheduled between the CMS and Professor David Eastwood, Chief Executive of the Higher Education Funding Council for England, at which issues such as these emerging 'maths deserts' and the Bologna process will be discussed.

There were further attempts by the office of Science Minister, Malcolm Wicks, to explain to the maths community why the research councils had lost £68 million from underspend despite the science budget having a 'ring fence'. John Kirk from the Department for Trade and Industry wrote to the Heads of Departments of Mathematical Sciences (HoDoMS) explaining that the whole department was experiencing budgetary pressures due to MG Rover and other measures such as the Waste Electrical and Electronic Goods Directive. Mr Kirk said all non ring-fenced budgets had been cut as far as they could before the department touched the science budget and added that this was a 'one off'. He said that the ring-fence around the science budget remained and would not be breached again in the foreseeable future. HoDoMS estimated £0.5 million will be lost from the Engineering and Physical Sciences Research Council budget for the mathematical sciences.

The CMS responded to an EPSRC Mathematical Sciences Programme consultation on Doctoral Training Grants by saying that this remains the best way of allocating funding to university departments for training doctoral students in the mathematical sciences. The Council welcomed a more transparent approach to the allocation process and the proposal to move to a two-year cycle of DTG allocation. It also called for departments to be given more informative feedback on their applications and suggested a number of other ways in which the allocation process could be refined. The response is available to view at www.cms.ac.uk/CMSsubmissions.html.

Sir Peter Williams, chair of the Advisory Committee on Mathematics Education, addressing the *more maths grads* launch on 23 April at Queen Mary, University of London.

The LMS Education Committee responded to a consultation by the Qualifications and Curriculum Authority on its Secondary Curriculum Review. Whilst broadly welcoming proposals for greater flexibility and plans to contextualise key mathematical skills in other subjects, the committee highlighted some serious concerns. These focused on lack of detail in the mathematics curriculum which could lead to ambiguity in the way examination boards interpreted it and important areas of mathematics simply not being taught. It called for the same level of detail as in the National Curriculum. The committee also asked how the proposed changes would fit with the introduction of two mathematics GCSEs, the diploma and functional mathematics. Finally, the submission warned against fragmenting mathematics as a subject in its own right by teaching it only in the context of others.

Caroline Davis
Mathematics Policy and Promotion Officer

MSOR CREDIBILITY

The Evaluators (for the Higher Education Academy) of the *UK Mathematics Statistics and Operational Research Network* (MSOR) seek any information from members on how successfully the MSOR Network has established credibility with teachers in the Higher Education sector and how they value its various activities events and services. Some members will see printed copies of the MSOR Newsletter *Connections* in their Departments or access the electronic version http://ltsn.mathstore.gla.ac.uk/articles/new.asp and some use the various other website resources via http://mathstore.ac.uk/ while others have attended Workshops or Conferences.

Equally, it would be helpful to learn about the usefulness of any joint Committee or Working Party involvement with MSOR. Any comments would be very welcome, preferably by email to me and in confidence if that is preferred. Thank you for any help.

Kit Dodson
Chairman of Evaluators
UK MSOR Network of HEA
ctdodson@manchester.ac.uk

EULER YEAR

On 15 April 2007, the birthday of the great Swiss mathematician and scientist Leonhard Euler (1707–1783) recurred for the 300th time; this presents a good occasion for reflecting on his life and his works in their historical context and in their implications for our time.

During the whole Euler Tercentenary year, the general public will have various opportunities for encounters with mathematics, the exact sciences, and their history. These activities are being planned by a Program Committee under the patronage of the Swiss Academy of Science. www.euler-2007.ch/en/index.htm.

NEWS FROM IMU

ICM 2010

Hendrik W. Lenstra has been appointed Chair of the Program Committee of the International Congress of Mathematicians 2010 in Hyderabad, India, 19-27 August 2010 by IMU President L. Lovász. His coordinates are as follows: Professor Hendrik W. Lenstra,

cont'd

Mathematisch Instituut, Universiteit Leiden, Postbus 9512 2300 RA Leiden The Netherlands (hwlicm@math. leidenuniv.nl). If you have proposals concerning the scientific program of ICM 2010 please contact Professor Lenstra by email.

ICIAM and developing countries

Professor Ian Sloan, President of the International Council for Industrial and Applied Mathematics, has announced a new scheme to help in promoting mathematics and its applications in developing countries. Financial support is to be given to the organisers of approved conferences (currently to the extent of US$3,000 per conference, for two conferences per year). The funds are to be used to provide ICIAM Fellowships to assist mathematicians from developing countries or regions to attend the conference. For full details of the scheme see the ICIAM website: www.iciam.org.

The above items are taken from the 22nd issue of the IMU electronic newsletter IMU Net (see www.mathunion.org/Publications/Newsletter).

VISITS

PROFESSOR EAMONN O'BRIEN

Professor Eamonn O'Brien (University of Auckland, New Zealand) will be visiting the Mathematics Departments at QMUL, Warwick and Imperial College London during the period 21 July to 11 August. His research area is computational group theory. The current plan is for him to visit QMUL from 21–28 July, Warwick from 28 July–4 August, and Imperial from 4–11 August, and he will give lectures at all three venues during those periods. For further details, and dates of lectures nearer the time, contact Charles Leedham-Green (C.R.Leedham-Green@qmul.ac.uk), Derek Holt (dfh@maths.warwick.ac.uk) or Martin Liebeck (m.liebeck@imperial.ac.uk). This visit is supported by an LMS Scheme 2 grant.

DR PATRICK INGRAM

Dr Patrick Ingram (University of Toronto) will be visiting the University of East Anglia during June. His interests lie on the border between computational number theory and diophantine approximation and will be working with Graham Everest on the arithmetic of elliptic divisibility sequences. Dr Ingram will speak at the University of East Anglia on 4 June as well as Nottingham and Warwick where his hosts are John Cremona (John.Cremona@nottingham.ac.uk) and Samir Siksek (samirsiksek@yahoo.com). Further details of the visit can be obtained from Graham Everest (G.Everest@uea.ac.uk). This visit is supported by an LMS Scheme 2 grant.

DR ANDREA PICCOLROAZ

Dr Andrea Piccolroaz (Trento Unviersity, Italy) will be visiting Liverpool University from 12–31 July. His recent research is on analysis of singular integral equations and weight functions in models of interfacial wavy cracks in linear elasticity. Dr Piccolroaz will give lectures at Liverpool, Manchester and Keele. Further information related to the visit can be obtained from Professor A. Movchan (abm@liv.ac.uk). The visit is supported by an LMS Scheme 2 grant.

DR VASSILIS ROTHOS

Dr Vassilis Rothos (Department of Mathematics, Aristotle University of Thessaloniki) will be visiting Loughborough University from 24 June to 14 July, with side visits to the University of Surrey and the University of Bristol. His work involves the study of nonlinear waves in lattices, particularly issues concerning the existence, structure and stability of multi-pulse solitary waves in differential-difference equations of physical significance, such as the discrete nonlinear Schrödinger equation, or the discrete Sine-Gordon equation. Details of the visit of Dr Rothos can be obtained from Roger Grimshaw (R.H.J.Grimshaw@lboro.ac.uk). This visit is supported by an LMS Scheme 2 grant.

THEORY AND APPLICATIONS OF THE HYPERBOLIC METRIC

A workshop on *Theory and applications of the hyperbolic metric* will be held from Monday 3 – Friday 7 September at the Heilbronn Institute, University of Bristol. The hyperbolic metric is both a powerful tool in complex analysis and an interesting object of study in its own right. This workshop is intended to serve both as a research conference for mathematicians whose research involves the hyperbolic metric, and as an introduction to the subject for graduate students who wish to learn about the hyperbolic metric from scratch. The workshop will feature two introductory short courses, each of five lectures:

- Alan F. Beardon (Cambridge) *The hyperbolic metric and its properties*
- David Minda (Cincinnati) *Applications of the hyperbolic metric to complex analysis*

The Monday afternoon and Tuesday morning sessions will consist only of introductory lectures, so those already familiar with the hyperbolic metric may prefer to arrive on Tuesday 4th in time for lunch. Thereafter the afternoon sessions will consist of research talks and survey talks on various aspects of the subject. There will be discussion sessions led by the lecturers, for those attending the introductory courses to consolidate what they have learnt. Several rooms will available throughout the week for collaborative work. Lunch will be provided each day, and there will be a registration fee of £15 to cover this. Accommodation will be provided for speakers. There will be limited funds available to contribute towards travel and accommodation expenses for UK graduate students attending the workshop (particularly those who do not already have EPSRC funding for travel). For the registration form and up-to-date information, see the webpage: www.maths.bris.ac.uk/~maetc/workshop.htm

I. If you would like to speak at the workshop email Edward Crane (edward.crane@gmail.com) with a suggested title. The conference administrator is Rebecca Ireland (r.e.a.ireland@bristol.ac.uk).

THIN LIQUID FILMS AND SLENDER JETS

The fluid dynamics of thin liquid films and slender jets are of central importance to numerous industrial, biomedical and daily-life applications and are accompanied by rich behaviour and pattern formation. As a result, they have received considerable attention in the literature; the last few years in particular have witnessed a great deal of activity in this area. This workshop, funded by the EPSRC and EUROMECH, is a three-day meeting at the Mathematics Institute, Imperial College, London, from 19–21 September, which will examine the latest exciting developments in this field. The first, second and third days will be devoted to *Dynamics of driven films, Instabilities, rupture and breakup* and to *Applications*, respectively. This workshop will bring together researchers from different backgrounds in order to both review recent developments and to identify new directions of research. The following are confirmed plenary speakers are:

- Andreas Acrivos (CUNY, USA)
- Anne-Marie Cazabat (Collège de France)
- Steve Davis (Northwestern, USA)
- Jens Eggers (Bristol, UK)
- Bud Homsy (UCSB, USA),
- Oliver Jensen (Nottingham, UK)
- David Quere (Collège de France)
- Sandra Troian (Caltech, USA)

Anyone interested in attending should contact Richard Craster (r.craster@imperial.ac.uk). Further details of the programme can be found on the conference website www3.imperial.ac.uk/mathsinstitute/events/euromech. The workshop is supported by an LMS conference grant.

HOMOTOPY THEORY AND LIE GROUPS

A two-day meeting on *Homotopy theory and Lie groups* will be held in Aberdeen from 13–14 September. The meeting will be an opportunity to celebrate the contributions to homotopy theory of Michael Crabb and John Hubbuck, who are both retiring. The tentative list of speakers is as follows:

- Martin Cadek (Brno)
- Martin Crossley (Swansea)
- Norio Iwase (Kyushu)
- Akira Kono (Kyoto)
- Brian Steer (Oxford)
- Stephen Theriault (Aberdeen)

The programme will start after lunch on Thursday 13 September and finish on Friday afternoon, followed by a formal dinner in the evening. Anyone interested in attending should contact the organiser Michael Weiss (mweiss@maths.abdn.ac.uk). Some financial support is available for UK-based graduate students. For further information visit the website www.maths.abdn.ac.uk/~mweiss/conference. The meeting is supported by an LMS conference grant.

BRITISH COMBINATORICS CONFERENCE

The 21st British Combinatorics Conference will be held at Reading University from 8–14 July. This conference is held biennially at different universities in the UK, and has grown from small beginnings to its current flourishing state. The main speakers will be:

- B. Bollobás (Cambridge and Memphis)
- R.A. Brualdi (Wisconsin)
- D. Bryant (Queensland)
- M. Chudnovsky (Princeton)
- M. Grannell and T.Griggs (Open)
- J. Håstad (Stockholm)
- J. Hirschfeld (Sussex)
- K. Martin (Royal Holloway)
- S. Thomassé (Lyons)

There will also be contributed talks. The main talks are accompanied by a book published by CUP which will be available at the start of the conference. Papers on the contributed talks will appear, if accepted, in a special volume of *Discrete Mathematics*. Further details about the conference may be found on www.personal.rdg.ac/~smx05mj/bcc2007. The conference is sponsored by the British Combinatorics Committee, and additional support from the LMS and EPSRC is gratefully acknowledged.

BRITISH TOPOLOGY MEETING

The 22nd British Topology Meeting will take place at the University of Sheffield from 10–12 September. As in previous years, the aim of the meeting is to provide British topologists with an opportunity to meet and discuss their own research, to listen to lectures from international specialists, and to provide a friendly audience for postgraduate students giving perhaps their first conference talks. The invited speakers this year are:

- John Baez (University of California Riverside)
- Gerd Laures (Ruhr-Universität Bochum)
- Constantin Teleman (University of Edinburgh)
- Michael Weiss (University of Aberdeen)

The meeting is supported by the London Mathematical Society and the University of Sheffield. For further details and registration please visit the conference web page www.jsigurds.staff.shef.ac.uk/btm22/ or contact Johann Sigurdsson (J.Sigurdsson@shef.ac.uk).

MATHSCAREERS WEBSITE

Part-time Website Editor

Required for two days a week on a self-employed basis. Candidates must have a strong mathematics background and have a keen interest in helping to promote the study of mathematics and statistics amongst young people.

www.mathscareers.org.uk is produced by the Council for the Mathematical Sciences and is a major part of the initiative to encourage more youngsters to appreciate why they study mathematics and the opportunities that are available to them. The website will be expanded during the next three years to provide additional resources for students, teachers and careers advisors. The ultimate aim is to make this the primary site for careers information on the mathematical sciences.

Candidates must have excellent communications skills and be prepared to attend regular meetings in London, although there may be occasions when meetings may be held elsewhere. Experience of developing/editing websites (in particular those aimed at the *mathscareers* target audience – 11 to 21 years old) is essential.

The salary will be in the region of £120 per day.

This vacancy has recently arisen due to the present editor moving to a full-time position at the end of June. It is planned that the new editor will be in place soon, and potential applicants are requested to respond quickly.

Closing Date: Applications must be submitted by **15th June**. However, it is hoped to make an appointment as soon as possible so early submissions are recommended.

Please send your application letter and CV to:
susan.bolton@ima.org.uk (preferred)

or alternatively, please contact:

The Institute of Mathematics and its Applications
Catherine Richards House
16 Nelson Street
Southend-on-Sea
Essex SS1 1EF

Telephone: 01702 354020

ALGEBRAIC AND TOPOLOGICAL METHODS IN NON-CLASSICAL LOGICS III

A conference on *Algebraic and topological methods in non-classical logics* will take place at St Anne's College and the Mathematical Institute, Oxford, from 5-9 August. This is the third in a successful series of international conferences on non-classical logics. The programme will focus on three interconnecting mathematical themes central to the study of non-classical logics and their applications: algebraic, categorical, and topological methods. The invited speakers are:

- Samson Abramsky (Oxford)
- Wojciech Buszkowski (Poznań)
- Alexander Kurz (Leicester)
- Jean-Eric Pin (Paris 7 and CNRS)
- Giovanni Sambin (Padova)
- Yde Venema (Amsterdam)
- Frank Wolter (Liverpool)

The conference is supported by an LMS conference grant and by the British Logic Colloquium.

Associated with the conference will be three specialized satellite workshops (running 4 and 10–12 August):

- *Coalgebraic logic* convened by Alexander Kurz (Leicester)
- *Categorical quantum logic workshop* convened by Bob Coecke (Oxford)
- *Spatial and spatio-temporal logics workshop* convened by Michael Zakharyaschev (Liverpool)

Details on the conference, including electronic registration, and on the workshops can be found at www.maths.ox.ac.uk/notices/events/special/tancl07/. Any further information required can be obtained from the organisers, Mai Gehrke and Hilary Priestley (email: tancl07@maths.ox.ac.uk).

HIGHER ORDER STATISTICS IN COSMOLOGY

A workshop on *Higher order statistics in cosmology* will be held at the Institute of Cosmology and Gravitation at the University of Portsmouth on 20 July. The workshop will focus on the application of higher order statistics in cosmology, including the use of *n*-point correlation functions in quantifying the galaxy distribution, searches for non-gaussianity in the cosmic microwave background and constraining the higher order terms present in gravitational lensing. The workshop will also cover the theoretical sources of such higher-order correlations and statistics. See the website for further details: www.sdss2005.info/higher.

ISRAMA 2007

The Calcutta Mathematical Society, widely known for its long tradition of promoting research and focusing the newest developments in mathematics and mathematics related topics, is organizing an International Symposium on Recent Advances in Mathematics and its Applications (ISRAMA 2007). The Symposium is on the occasion of 99th foundation Anniversary of the Calcutta Mathematical Society. The aim of the Symposium is to provide an ideal forum for participating scientists from India and abroad to exchange ideas and for possible scientific collaboration in the recent developments in different areas of mathematics and their applications. It is hoped that this meeting will help in fostering friendship among the scientists of the participating countries. The programme will include invited lectures by eminent researchers as well as contributed papers.

The Symposium will take place from 15–17 December at the Calcutta Mathematical Society, AE-374, Sector-1, Salt Lake City, Kolkata, Calcutta 700064, India. Authors are requested to submit two copies of papers to the Secretary of the Society with an abstract indicating the problem, its method of solution and important results. All the papers will be screened for presentation in the Symposium. The topics are:

- Algebra, Discrete Mathematics & Theoretical Computer Science
- Analysis & Topology and their Applications
- Geometry and its Applications
- Dynamical Systems, Chaos and Fractals
- Continuum Mechanics
- Plasma Physics
- Control Theory and Optimization Theory
- Bio-mechanics and Bioinformatics
- Applications of Mathematics to Environmental Problems
- History and Philosophy of Physical Science
- Quantum Information Theory
- Relativity and its Applications

All talks in the Symposium shall take place in English. The deadline for receipt of papers is **30 September**. The registration fee is US$200 for each participant from countries other than India (accommodation charges extra). All correspondence in respect of the Symposium to: Professor M.R. Adhikari, Secretary, Calcutta Mathematical Society (address above) email: cms@cal2.vsnl.net.in or cms_mra@yahoo.co.in.

PLANKTON

A EUROMECH colloquium on *The influence of fluid dynamics on the behaviour and distribution of plankton* will be held at Liverpool University from Wednesday 13 to Friday 15 June. Aquatic micro-organisms have evolved a bewildering variety of different adaptations and exhibit a wealth of survival strategies for thriving in their marine environment. Until comparatively recently most research has tended to focus on the micro-organisms themselves, in isolation from fluid dynamical regimes governing their surroundings. In this colloquium we seek to redress this balance, by encouraging presentations that investigate the rôle played by fluid dynamics on the behaviour (swimming, feeding and hydrodynamic signalling on small scales), population growth (resource competition on intermediate scales) and spatial distribution (aggregations and patchiness over a range of scales) of plankton (in its broadest sense from bacteria to fish larvae). Invited Speakers include:

- Øyvind Fiksen (Bergen, Norway)
- Thomas Kiorboe (Danish Inst. Fisheries Research)
- Adrian Martin (Southampton)
- Tim Pedley FRS (Cambridge)
- Jon Pitchford (Leeds)
- Rudi Strickler (Wisconsin USA)

The organisers are: R. Bearon and D.M. Lewis. Further details of the programme can be found on the conference website: www.liv.ac.uk/Maths/Euromech488/index.html. Late registrations still considered. Please contact the organisers above (see website for contact details). The conference is supported by an LMS conference grant.

UNIVERSITY OF CAMBRIDGE

FACULTY OF MATHEMATICS

ADAMS PRIZE

The University of Cambridge has announced the winner of one of its oldest and most prestigious prizes. The Adams Prize is named after the mathematician John Couch Adams and was endowed by members of St John's College. It commemorates Adams's discovery of the planet Neptune, through calculation of the discrepancies in the orbit of Uranus.

This year's topic was Statistics, and the Prize has been awarded to Dr Paul Fearnhead of the Department of Mathematics & Statistics, Lancaster University. The Chairman of the Adjudicators for the Adams Prize invites applications for the forthcoming Prize. The Prize will be awarded this year for achievements in research on mathematical aspects of Quantum Field Theory and String Theory, including research in related areas of mathematics (e.g. integrability, non-commutative geometry, mirror symmetry) carried out in the context of Quantum Field Theory and/or String Theory.

The prize is open to any person who, on 31st October 2007, will hold an appointment in the UK, either in a university or in some other institution; and who is under 40 (in exceptional circumstances the Adjudicators may relax this age limit). The value of the prize is expected to be approximately £14,000; of which one third is awarded to the prize-winner on announcement of the prize, one third is provided to the prize-winner's institution (for research expenses of the prize-winner) and one third is awarded to the prize-winner on acceptance for publication in an internationally recognised journal of a substantial (normally at least 25 printed pages) original article, of which the prize-winner is an author, surveying a significant part of the winner's field.

Applications (seven copies), comprising a CV, a list of publications, the work or works (published or unpublished) to be considered, and a brief non-technical summary of the most significant new results of these works (designed for mathematicians not working in the subject area) should be sent to:

The Secretary of the Adams Prize Adjudicators,
Faculty Office, Centre for Mathematical Sciences,
Wilberforce Road, Cambridge CB3 0WA.

(enquiries may be emailed to: faculty@maths.cam.ac.uk).

The deadline for receipt of applications is 31 October 2007.

IPMC 2007

The 8th International Pure Mathematical Conference 2007 (IPMC 2007) will take place from 24–26 August. This is the 8th international conference in the series of Pure Mathematics Conferences that take place in Islamabad every year in August. It is a thematic conference on Algebra, Geometry, Analysis held under the auspices of the Pakistan Mathematical Society. For further information and the on-line registration form visit the web page www.pmc.org.pk. The conference is convened by Professor Dr Qaiser Mushtaq in collaboration with Mathematics Division, Institute of Basic Research (Florida, USA), Quaid-i-Azam University, Islamabad, and Preston University, Islamabad. It will be financed partly by Higher Education Commission and Pakistan Science Foundation.

BRITISH LOGIC COLLOQUIUM

The British Logic Colloquium (BLC 2007) will be held at De Morgan House, London, from 6–8 September. Invited speakers include:

- Samson Abramsky (Oxford University)
- Barry Cooper (Leeds University)
- Anuj Dawar (Cambridge University)
- Jean-Yves Girard (Marseille University)
- Rob Goldblatt (Victoria University, NZ)
- Volker Halbach (Oxford University)
- Wilfrid Hodges (Queen Mary, London)
- Moshe Vardi (Rice University, Houston)
- Frank Wolter (Liverpool University)
- Boris Zilber (Oxford University)

The organisers, Robin Hirsch (r.hirsch@cs.ucl.ac.uk) and Michael Zakharyashev (michael@dcs.bbk.ac.uk), invite contributed talks on any aspect of logic. There is a limited number of bursaries available for students who wish to attend. A bursary covers the conference fee and accommodation in London. Applications for bursaries should be accompanied by a CV, a letter of recommendation (normally from the student's supervisor) and will be allocated on the basis of proven ability in logic. For any enquiries or more details contact the organisers or visit the website: sewww.dcs.bbk.ac.uk/~roman/blc/. The organisers thank the London Mathematical Society and the British Logic Colloquium for supporting this event.

REAL ANALYSIS

A meeting on *Real analysis, geometric measure theory, PDE and Banach spaces* will be held from 17-19 August at the University of Warwick covering these fields. Speakers include:

- G. Alberti (University of Pisa)
- A. Bruckner (University of California Santa Barbara)
- M. Csörnyei (University College London)
- W.B. Johnson (Texas A&M University)
- B. Kircheim (Oxford University)
- M. Laczkovich (Eötvös University Budapest)
- P. Mattila (University of Helsinki)
- A. Naor (Microsoft Research and Courant Institute)
- T. O'Neil (Open University)
- G. Schechtman (Weizmann Institute, Rehovot, Israel)
- J. Tiser (Czech Technical University Prague)
- N. Tomczak-Jaegermann (Edmonton, Alberta)
- L. Zajicek.(Charles University Prague)

Please contact Professor Keith Ball (kmb@math.ucl.ac.uk) or Professor Marianna Csörnyei (mari@math.ucl.ac.uk) for further details. The meeting is supported by an LMS conference grant.

DAVID CRIGHTON AWARD LECTURE

On 24 April over 100 people gathered at the Royal Statistical Society to hear Professor Sir Christopher Zeeman, FRS, deliver his David Crighton Award lecture *What's wrong with Euclid Book V*.

LMS president Professor John Toland opened the occasion with a warm welcome to the audience, not least David Crighton's widow, Johanna Crighton, and paid tribute to the man after whom the medal was named. Then IMA president Professor Peter Grindrod introduced Sir Christopher, explaining why he had been chosen to receive the award.

Sir Christopher began his lecture by apologising for his boldness. Then the modern giant of mathematics demonstrated where one of the ancient giants of mathematics went wrong – and suggested how to put him right.

Euclid's Book V is an exposition of Eudoxus' Theory of Proportion, regarded as one of the finest achievements of Greek mathematics. But without the real numbers, the Greeks could not define the ratio of two lengths, areas or volumes in relation to a unit of measure. Eudoxus overcame this by defining ratios abstractly – in fact Book V is the first known example of abstract algebra.

Sir Christopher pointed out that Euclid's work fails to define the ratio of two ratios. This severely limited the range of Greek mathematics, precluding the development of areas such as projective geometry (since cross ratios could not be defined), group theory (as products of ratios could not be defined) and dynamics (as even acceleration was beyond its reach).

To set the Greek mathematicians back on the right path, Sir Christopher then proposed a new axiom for Book V. His lecture showed this new axiom would not only satisfy all the propositions of this book but enable a definition of the ratio of ratios. Using this axiom and thoroughly modern notation, Sir Christopher took the audience through a series of proofs.

With a triumphant, "And that is what I set out to prove!" Sir Christopher came to the end of his final slide. And following a round of applause, Sir Christopher and his audience then enjoyed a well-catered reception.

The David Crighton medal is awarded every three years by the councils of the LMS and the IMA to a mathematician for services to both mathematics and to the mathematical community. It was instituted in 2002 in memory of Professor David George Crighton, FRS, a former president of the IMA and president-elect of the LMS at the time of his passing.

In 2006, the councils awarded the medal to Sir Christopher in recognition of his long and distinguished service. Amongst his outstanding achievements are his pioneering research in catastrophe theory, his role in founding the department of mathematics at the University of Warwick, being the first mathematician in the 125 year history of the Royal Institution Christmas lectures and his presidencies of both the London Mathematical Society and the Mathematical Association.

Caroline Davis
Mathematics Policy and Promotion Officer

Professor John Toland, Sir Christopher Zeeman and Professor Peter Grindrod

LONDON MATHEMATICAL SOCIETY

POPULAR LECTURES 2007

Institute of Education, London University – Thursday 12 July
University of Birmingham – Tuesday 18 September

Dr Hinke Osinga

Chaos and Crochet

'Maths predicts things – so why is the weather forecast often wrong? The intricacies of chaos theory can be explained with a surface that you can make by crochet.'

Dr Stephen Huggett

Knots

'The mathematical theory of knots is a weird and wonderful world. It is easy to enter, but surprisingly difficult to answer some of its most obvious questions!'

LONDON Commences at 7.00pm, refreshments at 8.00pm, ends at 9.30pm. Admission is free, with ticket. Apply by **4 July** to Lee-Anne Parker, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HS (email: parker@lms.ac.uk). A stamped addressed envelope would be appreciated.

BIRMINGHAM Commences at 6.30 pm, refreshments at 7.30 pm, ends at 9.00pm. Admission is free. Enquiries to Dr Simon Goodwin, School of Mathematics, University of Birmingham, Birmingham B15 2TT (email: goodwin@maths.bham.ac.uk).

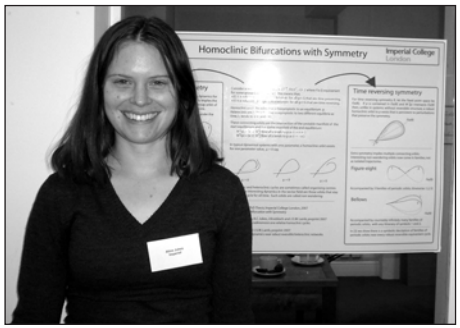
The lectures are intended to be suitable for a general audience and no specific mathematical knowledge will be assumed. Although the talks are not primarily intended for professional mathematicians, everyone is welcome and some members may wish to apply for tickets for friends and relatives.

WOMEN IN MATHEMATICS DAY 2007

The annual Women in Mathematics Day held at De Morgan House on Friday 27 April was organised by Isabelle Robinson (LMS Administrative Officer) together with the Scientific Organiser, Dr Dorothy Buck (Imperial College London and member of the LMS Women in Mathematics Committee).

As one of two and a half female postgraduate students out of fifteen in my department, it is very inspiring to attend a day's meeting that is designed specifically for women in mathematics. It is also always beneficial to meet other mathematicians at different stages of their careers, in academia or otherwise, from all over the country. As well as several researchers, I spoke to a school mathematics teacher who is considering returning to higher education and a recent mathematics graduate who has just started working at the Royal Institution of Great Britain (who are involved in science research and communication and organise the Christmas lectures amongst many other things.)

Caroline Series



Alice Jukes

The morning consisted of three presentations by three very successful mathematicians: a professor of pure mathematics, Caroline Series; a professor of applied mathematics, Nancy Nichols; and Dr Sarah Waters, who currently holds one of the prestigious EPSRC Advanced Research Fellowships. These talks covered a wide spectrum of mathematics. Caroline gave a fascinating talk on hyperbolic geometry, with some beautiful illustrative examples. Nancy spoke about her collaborative work with the Met Office, and how scientific computing techniques can be used in weather forecast predictions. Sarah talked about how modelling techniques can provide insight in medicine and biology, and gave an introduction to three case studies – blocked arteries, ureteric stent encrustation and tissue engineering – without showing any gruesome pictures. She also mentioned that although multi-disciplinary projects, such as these, are very rich in nature, there can also be potential communication problems... She spoke to a medic for over half an hour before realising that when the term 'model' was used, she meant the mathematical model and he meant the experimental set-up.

Lunch involved a generous buffet of sandwiches and fruit and lots of discussion. The afternoon session gave postgraduates, including myself, an opportunity to present some of their current work. I always get nervous about public speaking but the atmosphere was very friendly and informal. I work on an industry-sponsored project that uses mathematical modelling techniques to determine and attempt to solve the problem of gear rattle in vacuum pumps, but similar types of problem occur in car gear boxes and wind turbines. The other two postgraduate speakers, Helena Fischbacher-Weitz (Southampton) *Equivariant Riemann-Roch theory* and Asma Al-Ghassani (Loughborough) *Integrability tests for discrete equations* certainly spoke confidently and clearly about their research in pure mathematics.

It was interesting to hear about different people's mathematical backgrounds and how they have chosen their area of research. It was also very nice to recognise several friendly faces from the meeting last year. The meeting this year was actually over-subscribed with a waiting list, so there is clearly a strong demand for days like this. I personally gained a lot, and am looking forward to next year.

After tea and a poster session, the day ended with some going for dinner at a nearby pizza restaurant followed by a visit to the British Museum.

Joanna Mason
University of Bristol

Sarah Waters

Erica McKee Ritva Hurri-Syrjanen Nancy Nichols Gwyneth Stallard

RECORDS OF PROCEEDINGS AT MEETINGS

REGIONAL ORDINARY MEETING

held on *Friday 20 April 2007* at the University of Loughborough. About 40 members and visitors were present for all or part of the meeting.

The meeting began at 10:45 am, with the President, Professor J.F. TOLAND, FRS, FRSE, in the Chair. Nine people were elected to Ordinary Membership: O. Davydov, X. De La Ossa, T. Huettemann, N. Iyudu, P.N. Kaloyerou, S. Krusch, M.R.E. Proctor, K.E. Taylor, M.R. Turner; seven people were elected to Associate Membership: C.A. Daniel, D. Fletcher, G.E. Leigh, L. Rackham, E.L. Render, J.M. Van Order, T. Wu; and one person elected a Member under a Reciprocity Agreement: V.S. Dean (Amer. Math. Soc.).

The Record of the Proceedings of the Society Meeting held on 9 February 2007 was signed as a correct record.

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

Professor A.P. VESELOV introduced a lecture given by Frances Kirwan on *Non-reductive group actions and symplectic implosion*.

After lunch, Dr A. BOLSINOV introduced a lecture given by Yves Colin de Verdière on *Localisation of Laplace eigenfunctions: recent progress and open problems*.

After tea, Professor Veselov introduced a lecture given by Oleg Viro on *The 16th Hilbert problem: a story of mystery, mistakes and solution*.

Professor Veselov introduced a lecture given by Mark Gross on *Affine geometry, tropical geometry, and mirror symmetry*.

The Programme Secretary, Dr S.A. HUGGETT expressed the thanks of the Society to the local organisers and the speakers for putting on such an excellent meeting.

A reception was held after the meeting at which the prize for the poster competition was awarded to Asma Al-Ghassani from the University of Loughborough for her poster *Diophantine integrability test*. A dinner was then held at the Thai Grand.

LMS MIDLANDS REGIONAL MEETING AT LOUGHBOROUGH

The London Mathematical Society Midlands Regional Meeting was held on Friday 20 April 2007 at Loughborough University. The meeting began with opening remarks from John Toland, President of the LMS. Some brief business of the Society was conducted before the talks began, including an induction of new members, who were invited to sign the famous member book, adding their names to those of past illustrious members, such as G.H. Hardy. This was followed by a welcome by Sasha Veselov, one of the organizers of the conference, who then introduced the first speaker, Frances Kirwan.

Professor Kirwan gave a talk entitled *Non-reductive group actions and symplectic implosion*. This explained a connection between algebraic and symplectic geometry important in the study of group actions in algebraic geometry, particularly those involved with the construction of moduli spaces. Professor Kirwan explained the basics of the theory in the 'good' case, when the group action is reductive and there is a nice quotient construction. She then explained the difficulties of producing a sensible quotient in the non-reductive case, and her joint work in progress with Brent Doran to create a theory of 'symplectic implosion' as opposed to symplectic reduction, which would permit the construction of quotient spaces with reasonable properties in the non-reductive case.

After a group lunch arranged by the organizers, attendees enjoyed the second talk of the meeting, by Yves Colin de Verdière entitled *On the Localization of Laplace eigenfunctions: recent progress and open problems*. Professor Colin de Verdière focused on the case of domains with chaotic geodesic flow, where closed geodesics may show up as 'scars' when plotting the asymptotic behaviour of eigenfunctions corresponding to larger and larger eigenvalues. He discussed three recent advances in this area, focusing on new results in the case of geodesic flows on manifolds of negative curvature.

The meeting then stopped for a tea and coffee break, where we also had a chance to look at posters produced by Loughborough PhD students in mathematics about their research. The meeting continued with an amusing talk by Oleg Viro entitled *The 16th Hilbert problem: a story of mystery, mistakes and solution*. Professor Viro began by explaining Hilbert's 16th problem, about the grouping of the components of an algebraic curve of order six with the maximal number of components (11), called M-curves. He then gave the history of its solution (Hilbert's conjecture was wrong), and the many false steps along the road, including even a few short proofs. More importantly, Professor Viro explained the breakthrough in research in algebraic geometry to which research on the problem led. He concluded with a remark on the mysterious role of the number 16 in the topology of real algebraic varieties, the subject of Hilbert's 16th problem!

The last talk of the meeting was by Mark Gross, who gave a taste of the meeting to follow over the weekend on tropical geometry. His talk *Affine geometry, tropical geometry, and mirror symmetry* was the first of a series of three talks about the concept of mirror symmetry, from string theory. Mirror symmetric manifolds are pairs of manifolds with both complex and symplectic structures, together with an isometry which switches the complex and symplectic structures on the two 'mirror duals'. Professor Gross described ongoing work with his collaborator Bernd Siebert on constructing interesting pairs of mirror dual manifolds using techniques from tropical geometry.

After the last talk Stephen Huggett, the LMS Programme Secretary, made closing

cont'd

remarks and thanked the organizers: Alexey Bolsinov, Rod Halburd and Sasha Veselov. The conference concluded with a generous wine reception and a fabulous meal at the Thai Grand.

The meeting was followed by the workshop on Tropical Geometry, which by a common opinion of the participants was very successful. The speakers E.M. Feichtner, V. Fock, M. Gross, I. Itenberg, G. Mikhalkin, A. Szenes and O. Viro gave an excellent overview of this very fresh branch of geometry in relation with various problems of mathematics and theoretical physics.

E. Hunsicker
University of Loughborough

REVIEWS

Dr Euler's Fabulous Formula by Paul Nahin, Princeton, 2006, 404 pp, £18.95, ISBN: 0-691-11822-1.
Leonhard Euler: A Man to be Reckoned With by Andreas K. and Alice K. Heyne, Birkhäuser, 2007, 45 pp, £14.50, ISBN: 3-7643-8332-1.
DVD: The great π/e Debate: Which is the better number? with Colin Adams and Thomas Garrity, Mathematical Association of America, 2007, ISBN: 0-88385-900-9.

To celebrate the 300th anniversary of Euler's birth there has been a rash of books, both serious and light, about the great master. These two books and DVD illustrate the wide range of these.

Dr Euler's Fabulous Formula concerns the formula $e^{i\pi} + 1 = 0$ which, as the author claims, 'Cures Many Mathematical Ills'. Paul Nahin is already well known for his *An Imaginary Tale: The Story of* $\sqrt{-1}$ (Princeton, 1998), and this book is very much in the same vein. It is a 'popular' book, written for a general reader with some mathematical background equivalent to a first-year undergraduate course in the UK, and surveys a wide variety of topics, ranging from a discussion of the irrationality of π, via Fourier series ('named after Fourier but Euler was there first – but he was, alas, partially WRONG'), to electronics ('technological applications of complex numbers that Euler, who was a practical fellow himself, would have loved'), and the book ends with a well-written biography of 'Euler: The Man and the Mathematical Physicist'.

The author's forthright and opinionated style makes for lively reading but occasionally becomes irritating – for example, the book starts with an unnecessary diatribe against the painter Jackson Pollock and a dubious discussion about whether Euler's formula is an equation. However, once he settles into more traditional material, things improve greatly. He tries hard to motivate and explain difficult ideas to his audience, and though the going may be difficult for his readers in a few places, he largely succeeds. It is a book that can be recommended to interested students and general readers with the necessary mathematical background.

Rather different is *Leonhard Euler: A Man to be Reckoned With*, an English translation of a German work, a large-format book that presents Euler's life in cartoon form. The presentation is attractive, with excellent illustrations by Elena S. Pini, and reminded me somewhat of the Asterix books. I spent an enjoyable hour reading about Euler's early life in Basle and his subsequent life in St Petersburg, Berlin and again in St Petersburg. For a cartoon book, the treatment is remarkably accurate although inevitably much is omitted. I am not sure who the intended audience is – the book seems to contain little to interest teenagers unless they are already interested in mathematics, and is unlikely to appeal to more than a handful of adults, although it might be an entertaining book to purchase for a school library.

Finally, there is an entertaining debate that took place in 2005 at Williams College, Massachusetts, as to which of π and *e* is 'the better number', a debate that 'has plagued humankind from time immemorial'. Both speakers are highly entertaining and present their 'arguments' with wit and humour while amusingly ridiculing their adversary's arguments. The resulting 40-minutes' entertainment would be ideal for showing at a school or college class or mathematical society. As to which is the better number, you'll just have to watch the DVD …

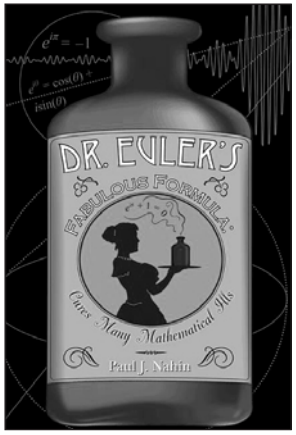
Robin Wilson
The Open University and
Gresham College, London

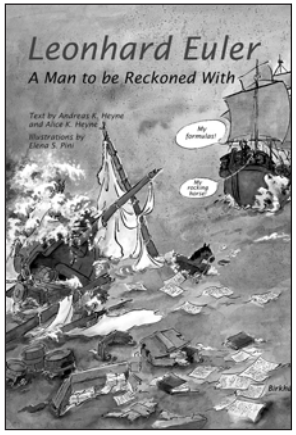
Leonhard Euler by Emil A. Fellmann, translated from the German by E. and W. Gautschi, Birkhäuser, 2007, 179 pp, £23, ISBN 978-3-7643-7538-6.
The genius of Euler. Reflections on his life and work edited by William Dunham, Mathematical Association of America, 2007, 307 pp, ISBN 978-0-88385-5.
The early mathematics of Leonhard Euler by C. Edward Sandifer, Mathematical Association of America, 2007, 393 pp, $46.95. ISBN 978-0-88385-559-1.

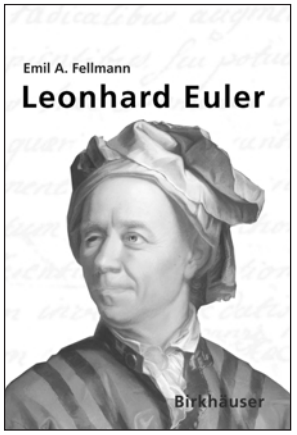
The career of Euler is well-known: growing up near Basel after birth there in 1707, and studying at its university; then to St Petersburg in 1727 to join the new Academy, where he died in 1783 but with a 25-year middle period at the Berlin Academy from 1741 to 1766. His production of books and papers was non-stop from 1725 onwards, indeed posthumously for papers until 1830. Some further writings appeared later; and also reprints, especially in the edition of the *Opera omnia*, which began to be prepared in the bicentenary year of 1907 and still awaits two volumes of publications, many letters and all the manuscripts. All this work came from a man with poor eyes, and virtually none at all for the last dozen years or so, when his output increased!

A spate of books is anticipated this tercentenary year, of which the three reviewed above are among the first. Fellmann's is a translation of a largely non-technical biography that appeared in German from Rowohlt Verlag in 1995; for some reason this fact is not stated in it. The translation is normally comprehensible but creaks quite a lot. Only an index of names is provided. The bibliography has been slightly updated.

The story includes some little-known details: for example, it starts with Euler's autobiographical essay of 1767. His generally calm life was occasionally fraught; one possible upset in 1746 made him hope for







England as a desirable base (p.100). The range of mathematics forms a daunting challenge with so much to cover, and it is quite well met; in particular, concerning Euler's contributions to applied mathematics. But the account of the last period, when he was especially prolific despite blindness, is far too short. Further, the complete avoidance of symbols throughout sometimes makes the account discursive.

Dunham published an historical review of Euler's pure mathematics in 1999: from the same house he now offers a selection of historical articles, many from its own journals. Most of them first appeared within the last 35 years, but a few are much earlier. All texts have been reset. A good selection of illustrations is provided (as also in Fellmann). The index is very weak on subjects.

The first 100 pages contain biographical articles, so that the measure of repetition among the general ones becomes a little tedious. The rest is given over to the mathematics, but only the pure sides: functions, series, aspects of calculus and of algebra, number theory, the seven bridges problem, and some combinatorics. The work on applied mathematics – mechanics, astronomy, engineering, and some areas of physics – receive only brief mentions here and there. But this distorts Euler's own view of mathematics, where such applications dominated his own survey of 'the utility of higher mathematics', written in 1741 but first published only in 1847.

That survey forms the final chapter of Sandifer's book, which is the most original of the three. He takes papers written during Euler's first period, places them in apparent order of composition, and then analyses in some detail the content of each one, usually in the order of the material as it is presented. He is historically sensitive to many issues, such as the differences between Euler's and our understanding of convergence; often he retains Euler's own notations. He praises content and presentation frequently, but also is not afraid to find Euler directionless or boring on occasion (a characteristic of some later Euler also). His account would have been even more useful if he had cited more often the numbers of the sections in which Euler almost always divided his papers, and if the index had handled subjects better.

The topics covered are those mentioned above for Dunham, and also continued fractions, where Euler did some important pioneering work. But therefore the same distortion occurs, even with the implicit warning of the final paper of 1741: apart from a few papers in which some application provided the motivation, applied mathematics is missing. Further, Sandifer even confuses mechanics with physics (for example, on p. 201 concerning the publication of the book *Mechanica*); however, throughout the 18th century the differences between mechanics and physics were basic, regarding content, use or avoidance of mathematics, and reputation as a science.

Fellmann's book is better than the other two in this respect, though there are other limitations. As one result neither he nor Dunham covers one of Euler's most far-reaching innovations: the differential coefficient (as S.F. Lacroix will name it), forerunner of the derivative (textbook on the differential calculus, 1755). Nor do we learn about the method of handling perturbation theory by means of trigonometric series (1747), or the organisation of Newton's laws in the form that they came to be used normally (1752), to mention just two capital achievements. So there is still much to record; but other books on Euler are in the offing, and at the time of writing most of 2007 is still available to correct the distortion!

I. Grattan-Guinness
Middlesex University

EPSRC

The London Mathematical Society

Asymptotic Methods in Infinite Group Theory

LMS-EPSRC Short Course

Mathematical Institute, Oxford, 9 – 14 September 2007
Organiser: Dan Segal

An introduction to recent developments in infinite group theory: structure of profinite groups and pro-*p* groups, analytic and arithmetical objects that can be associated with infinite groups, the relations between infinite groups and their finite quotients. The lectures will provide enough of the necessary background so that participants are made aware of what is already known, can appreciate problems of current interest, and have some idea of the available tools. These tools cover a broad spectrum of contemporary mathematics and will be a valuable addition to the repertoire of research students who may find themselves working in the general area, not necessarily on the precise questions discussed in the course.

There will be three course lecturers:

- **Benjamin Klopsch** (Royal Holloway, University of London)
  Analytic pro-p groups (a meeting-ground between finite p-groups and Lie theory)
- **Nikolay Nikolov** (Imperial College)
  Strong approximation methods in infinite group theory (*a meeting-ground between algebraic groups and number theory*)
- **Marcus du Sautoy** (Oxford)
  Zeta functions associated to infinite groups (*a meeting-ground between combinatorics, algebraic geometry and analysis*).

In addition, there will be tutorial sessions, with the organiser and other researchers active in these areas.

The course is intended for research students in group theory and related areas, e.g. 'unconventional' zeta functions. The only prerequisite is a basic grounding in algebra.

All PhD students registered at a UK university will be charged a registration fee of £100 (in the case of EPSRC funded research students, this fee should be paid by their departments from their DTA). All others (overseas students, postdocs) must pay the full subsistence costs of £336, plus a registration fee of £250, making a total of £586 for this course.

Applications should be made using the registration form available on the Society's website at: www.lms.ac.uk/activities/rmc/sc/38poster.html.

Numbers will be limited and those interested are advised to make an early application. The closing date for applications is **Friday 13 July**. All applicants will be contacted by the London Mathematical Society approximately one week after this deadline; we will not be able to give information about individual applications before then.

About the Short Courses
The principal aim of the courses is to provide training for postgraduate students in core areas of mathematics. The courses are intended to provide high quality courses for graduate students from around the country in an effective and efficient manner. 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 experts in the topic.

The University Of Sheffield.

EPSRC

A Summer School on

Solving Polynomial Equations and Structured Matrix Methods for Approximate GCD Computations: A New Approach

University of Oxford, 17–21 September 2007

Organisers: Joab Winkler and John Allan (The University of Sheffield)

The course will consist of lectures and laboratory classes on a new technique for computing the roots of a polynomial whose coefficients are subject to error, and the calculation of an approximate greatest common divisor (GCD) of two polynomials. This technique uses structured matrix methods on the Sylvester resultant matrix in order to perform a sequence of GCD computations. The theory will be presented for polynomials that are expressed in both the power and Bernstein bases, and thus the Summer School is of interest to researchers in signal processing, control, geometric modelling and other disciplines in which numerical computations on polynomials are required.

Topics covered
- Problems that yield polynomial equations of high degree
- Reasons for the failure of classical methods for solving polynomial equations of high degree
- Structured and unstructured condition numbers of roots of polynomials
- Structure preserving matrix methods with respect to:
  - The Sylvester resultant matrix and its subresultants
  - Approximate greatest common divisor computations
  - Equality constrained least squares problems
- The method of non-linear least squares

Invited speakers
- Rob Corless (University of Western Ontario, Canada)
- Gershon Elber (The Technion, Haifa, Israel)
- Gene Golub (Stanford University, USA)
- Zhonggang Zeng (Northeastern Illinois University, USA)

Location and cost
The Summer School will take place at the Oxford University Computer Laboratory, and en-suite accommodation has been reserved at Oriel College. The registration cost is £650, which includes five nights bed and breakfast, lunch for four days, a complete set of lecture notes, and the conference dinner. EPSRC studentships are available.

Further details, including costs, studentships and registration can be found at www.dcs.shef.ac.uk/ml/summer_school

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SPORT AND MODELLING

Wednesday 27th June 2007: Evening Lectures

Harrie Massey Theatre, University College London

5:00 pm – 5:45 pm *Forecasting the 2003 Rugby World Cup: a profitable application of mathematical modelling*

Professor Stephen R. Clarke (Statistics, Swinburne University of Technology, Australia)
For many years Swinburne Sports Statistics have used their mathematical expertise to provide computer generated predictions for sports events to the general public and mass media. The expansion of sports betting has created a market for sports prediction expertise, and there have been several profitable attempts by staff and students at demonstrating the inefficiency of football, cricket and rugby betting markets. This talk describes one of these betting forays, resulting from a graduate student project. A simple forecasting model was built to predict the results of each game and the tournament in the 2003 Rugby World Cup. An exponential smoothing technique was optimized on all 566 games played between the 20 World Cup teams from 1996. The model predicted the winning team, the winning margin and the probability of a win. A simulator used these predicted probabilities to calculate a team's overall chances of winning or placing in the tournament. Predictions were regularly updated on our web site and received other mass media exposure. The model selected the correct winner in 46 of the 48 games, and the predicted margins were used for profitable gambling. The syndicate continues to successfully apply the methods to other competitions.

5:45 pm – 6:15 pm *Break for Refreshments*

6:15 pm – 7:00 pm *Competitive balance in national European soccer competitions*

Professor Dr Ruud Koning (Sport Economics, University of Groningen, The Netherlands)
According to popular belief, competitive balance in national soccer competitions in Europe has decreased due to the Bosman ruling and the introduction of the Champions League. We test this hypothesis using data from seven national competitions, for a host of indicators. We find some evidence for competitive balance having decreased in England, and weak evidence for it having decreased in Netherlands and Belgium. For Germany, France, Italy, and Spain, we find no consistent change whatsoever. We use factor analysis to examine whether our measures of competitive balance can be condensed in a limited number of factors. Also, we examine the development of competitive balance in European competitions such as the Champions League.

Frank Smith and the LIMS Committee

Entrance is free and event is open to all
RSVP: office@lims.ucl.ac.uk

CALENDAR OF EVENTS

This calendar lists Society meetings and other events publicised in the *Newsletter*. Further information can 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).

JUNE

2-9 Symmetry and Perturbation Theory Conference, Otranto, Italy (356)
6-8 Postgraduate Combinatorial Conference, St Andrews (359)
6-8 Representation Theory of *p*-adic Groups, King's College London (358)
10-12 Euler Festival, St Petersburg (359)
13-15 The Influence of Fluid Dynamics on the Behaviour and Distribution of the Plankton Coloquium, Liverpool (360)
18-19 Hamiltonian Dynamical Systems and Applications Seminar, Montreal (355)
18-22 Cherednik Algebras ICMS Workshop, Edinburgh (358)
18-24 Nonlinear Evolution Equations and Dynamical Systems Workshop, Barcelona (359)
22 LMS Meeting, London (360)
22 Magnetic Fields in the Sun and Stars Meeting, Cambridge (359)
25-30 Number Theory and Computability ICMS Workshop, Edinburgh (358)
27 Sport and Modelling LIMS Evening Lectures, University College London (360)
30 Euler's Mathematical Legacy Meeting, Oxford (356)
30-4 Jul Geometry of Riemann Surfaces Conference, Crete (356)

JULY

2-6 Journées Arithmétiques Meeting, Edinburgh (357)
2-6 Effective Computational Methods for Highly Oscillatory Problems Workshop, INI, Cambridge (353)
2-6 Applications of Multiscale Methods and Statistical Inference Course, London (357)
2-12 Recent Developments in Random Walks LMS Durham Symposium (359)
4-6 Singularity Theory Conference, Liverpool (358)
4-7 Game Theory Meeting, Madrid (359)
8-14 British combinatorics Conference, Reading (360)
9-12 3-Manifold Geometry and Topology Symposium Workshop, Warwick (350)
9-12 Diophantine Equations via Analytic Number Theory Workshop, Bristol (357)
9-13 Homological Algebra and Equivariant Homology Theory LMS-EPSRC Short Course, Southampton (359)
9-13 Further Developments in Quantitative Finance ICMS Workshop, Edinburgh (358)
9-13 Dynamics Days Europe, Loughborough (356)
12 LMS Popular Lectures, London (360)
13-14 David Epstein 70th Birthday Celebration Symposium Workshop, Warwick (350)
15-10 Aug AARMS, Nova Scotia (358)
16-18 Pseudo Hermitian Hamiltonians in Quantum Physics Workshop, London (358)
16-20 ICIAM, Zürich, Switzerland (349)
16-20 Optimal Transportation and Applications to Geophysics and Geometry ICMS Workshop, Edinburgh (358)
16-21 Hyperbolic Structures on 3-Manifolds and Large Scale Geometry of Teichmüller Space Symposium Workshop, Warwick (350)
20 Higher Order Statistics in Cosmology Workshop, Portsmouth (360)
23-27 Positivity and its Applications Conference, Belfast (358)
23-27 Coloquio Latinoamericano de Algebra, Colombia (358)
30-3 Aug Fusion Systems LMS-EPSRC Short Course, Birmingham (359)

AUGUST

2-3 Combinatorics of Arc-Transitive Graphs and Partial Orders Meeting, Leeds (359)

C.E. BICKMORE

LMS member 1875-1899

Charles Edward Bickmore, MA
Fellow of New College, Oxford
Second Master of the Isle of Wight College, Ryde
Second Master of the King's Grammar School, Warwick