

NEWSLETTER

No. 356 February 2007

Forthcoming Society Meetings

2007

Friday 9 February London P. Maini A. Stevens (Mary Cartwright Lecture) [page 3]

Friday 20 April

Midlands Regional Meeting Loughborough Y. Colin de Verdière F. Kirwan O. Viro

Tuesday 24 April

David Crighton Lecture London E.C. Zeeman [*page 8*]

Wednesday 30 May

SW and South Wales Regional Meeting, Cardiff

Friday 22 June London

Thursday 25 October Northern Regional Meeting, Sheffield

NEXT STEPS

The second meeting of the Joint Planning Group to develop the framework for a possible unification of the IMA and LMS took place on 6 December 2006. Verbal reports from Council meetings of both bodies were given. The LMS Council had been the less satisfied of the two with the three papers – Vision and Mission. Constitution and Membership that the Group had produced for them. They asked for improvements to the Vision and Mission paper and expressed concerns over the proposed membership structure. By contrast the IMA Council was reported to be broadly content with the draft papers.

Vision and Mission did not detain the Group too long. It became clear, at least in outline, how the paper could be improved to suit all parties. It sufficed therefore to ask some willing volunteers to redraft it.

Membership is giving the Group more trouble. The problem centres on a proposal to allow more than one grade of full voting membership. Without that, there is a problem with any transference of the existing two such grades within the IMA (Fellow and Member) into a new body. This problem needs to be resolved and it was agreed to ask two individuals to draft opposing papers as a basis for further and fuller discussion.

The Group went on to consider proposals for a Constitution. Good progress was made on matters of representation: the future Council, elections to it, cooption, constituencies, its Boards, Committees and service areas. There was general agreement on the principles that would underlie the drafting of a Charter, By-Laws and Regulations and on the ringfencing and protection of the LMS research funds. It was agreed that the Constitution document should be redrafted to reflect the views expressed.

The final substantive item for discussion was the name of the proposed merged society, where a number of possibilities was considered.

The Joint Planning Group's next meeting, on 24 January, will be reported on in future issues of the LMS Newsletter and Mathematics Today.

> Charles Evans, IMA Charles M. Goldie, LMS

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2007 ROYAL SOCIETY MEDALS AND AWARDS Call for Nominations

The Royal Society has issued a call for nominations for its medals, prize lectures and awards to be made in 2007, full details of which can be found online at www.royalsoc.ac.uk/ awards.

Awards that may be of interest to LMS members include The Sylvester Medal, which is awarded triennially for the encouragement of mathematical research, and awards made for achievement in any branch of science including the Copley Medal, the Michael Faraday Prize (for science communication) and the Kohn Award for Excellence in Engaging the Public with Science.

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The Royal Society and Académie des Sciences Microsoft European Science Award is designed to recognise scientists working in Europe who have made a major contribution to the advancement of science through the use of computational methods. The 2007 award will focus on the intersection of computing and the physical sciences, including mathematics and engineering. For details of this award please see www.royalsoc.ac.uk/microsoft.

The deadline for receipt of nominations is **21 February 2007**. Further inquiries about the awards or the nominations process should be directed to Chloë Sykes at chloe.sykes@ royalsoc.ac.uk or on 020 7451 2575.

SYLVIA DALY 10th Anniversary

Sylvia Daly, who supports the Programme Committee, celebrated her 10th anniversary of joining the staff of the LMS on 2 January. When she joined the Society was still in Burlington House and Sylvia worked parttime with Susan Oakes in the Society's office. Sylvia assisted in the move to De Morgan House in 1998.

Sylvia is known by the many mathematicians who apply for grants from the Programme Committee. She is responsible for the efficient handling of the applications and, over her time, has managed the payment of many hundreds of thousands of pounds of grants.

LMS Newsletter

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Charity registration number: 252660.

LONDON MATHEMATICAL SOCIETY

MARY CARTWRIGHT LECTURE

Friday 9 February 2007

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

3.30 – 4.30 P. Maini (Oxford) Emergent Phenomena – Fact or Fiction?

4.30 - 5.00 Tea

5.00 – 6.00 A. Stevens (Leipzig) Mary Cartwright Lecture Interacting Cell Systems: An Example for Mathematical Modelling in the Life-Sciences

A reception will be held at De Morgan House at 6.15 pm with a dinner afterwards at the II Fornello Restaurant, 150 Southampton Row, London WC1 at 7.00 pm. The cost will be £23.00 per person, inclusive of wine. Those wishing to attend should inform Susan Oakes, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HS, enclosing a cheque payable to the 'London Mathematical Society' to arrive no later than **Monday 5 February**.

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

NEWSLETTER

MATHEMATICS POLICY ROUNDUP

Research Councils UK is running a consultation on a set of proposals to increase the efficiency and effectiveness of the peer review process. David Larman co-ordinated a response from the Council for the Mathematical Sciences. It argued that many of the proposals would disadvantage the mathematical sciences and called for a more discipline-specific approach. The submission can be found on the CMS website www.cms.ac.uk/submissions.html.

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In December, the government published its report on a metrics based Research Assessment Exercise. This proved to be good news for mathematics and statistics, as these disciplines will not be subject to the metrics based assessment process applied to other science subjects. The new process for the mathematical sciences promises a much reduced, light-touch peer review process informed by discipline-specific indicators.

The House of Commons Education and Skills Select Committee is running an inquiry into the Bologna Process, whereby degree structures will be harmonised across Europe. The CMS submitted written evidence in December 2006, emphasising the need for the four-year MMath gualification to be counted as a higher level degree (second cycle). It also called for clarity in funding for the second cycle and advised that harmonisation must take account of the diverse needs of employers and society. The submission can be found on the CMS website www.cms.ac.uk

Heads of UK university mathematical science departments are being surveyed in a bid to get a true picture of the health of the UK mathematics. The CMS has joined with the Heads of Departments of Mathematical Sciences to create a guestionnaire, which is to be sent to each departmental head and is intended to become an annual fixture. The

aim is to develop a picture of how many students and staff there are in UK mathematical science departments. All responses will be anonymised to enable respondents to be as open as they see fit.

Helen Orr has been appointed as project manager for the moremathsgrads project. The £3.3 million project is funded by the Higher Education Funding Council for England and is scheduled to run over the next three years. Its ultimate aim is to get more students studying mathematics. Ms Orr is familiar with widening participation work, working previously as area co-ordinator for the government's AimHigher project in Coventry and Warwickshire. She took up her position at moremathsgrads at the end of January.

Mathematicians have won £7.4 million in the Engineering and Physical Sciences Research Council innovation awards. The University of Oxford will establish a £3.3 million world-class research centre focused on analysis of non-linear partial differential equations. A similar centre will be set up between the University of Edinburgh and Herriot-Watt University at Edinburgh in a £3.4 million project. The Awards were introduced by EPSRC in 2005 to support strategic areas of research that are particularly at risk due to falling undergraduate numbers.

A new network for promoters of mathematics has been established. In an initiative spearheaded by the LMS/IMA Mathematics Promotion Unit, about 20 people gathered at De Morgan House to discuss ways in which those promoting the work of the mathematics community can work more closely together. An email list has been set up (MATHS-PROM) and discussions are underway to create a central website where information about events and resources can be listed and shared by members of the network.

Caroline Davis

Mathematics Policy and Promotion Officer

JOURNAL OF TOPOLOGY

The London Mathematical Society

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It is with great pleasure that we announce the launch of a new journal, to be called the Journal of Topology, that will publish its first issue in January 2008. The Board of the Journal will be:

- Michael Atiyah Marc Lackenby
- Martin Bridson Wolfgang Lück

Graeme Segal

Ulrike Tillmann

- Jean Lannes Ralph Cohen
- Simon Donaldson • John Roe
- Nigel Hitchin
- Frances Kirwan

Ulrike Tillmann will be the Managing Editor.

Aims and scope:

The Journal of Topology will publish papers of high guality and significance in topology, geometry and adjacent areas of mathematics. Interesting, important and often unexpected links connect topology and geometry with many

other parts of mathematics, and the editors welcome submissions on exciting new advances concerning such links, as well as those in the core subject areas of the journal. The Journal of Topology will appear in quarterly issues with articles posted individually on line.

Guidelines for paper submission:

The journal invites submissions from 16 January 2007. For more information on submission guidelines please visit www.lms.ac.uk/publications/jtop.html.

If you have further enguiries about the journal, please contact Susan Hezlet, Publisher LMS, at hezlet@lms.ac.uk, or the Managing Editor at tillmann@maths.ox.ac.uk.

The price of the Journal for Volume 1 (four issues) including electronic access will be £300 or \$570 in 2008, although we plan further discounts for libraries who take our other journals. The journal is owned by the LMS, a not-for-profit publisher and the pre-eminent British society for research mathematics, and will be published in association with Oxford University Press.

All sales enquiries should be made to jnls.cust.serv@oxfordjournals.org or to hezlet@lms.ac.uk.



NEWSLETTER

EUROPEAN MATHEMATICAL SOCIETY

Dear Colleague,

Let me introduce myself. My name is Ari Laptev and I am Professor of Mathematics at Imperial College London and at KTH in Stockholm. I have been elected as the President of the European Mathematical Society (EMS) for the period January 2007 -December 2010.

EMS is a relatively new Society which still needs to attract many more individual members, by providing a service which will meet the needs of every European mathematician.

Many important aims have already been

achieved. Among them is the establishment of the EMS Publishing House, a non-profit organization, to which six journals and several book series are already contracted. It has been responsible for all the publications related to this year's International Congress of Mathematics in Madrid.

The EMS plays an increasingly important role in relation to the governing bodies of the European Union. In particular, it is able to act as an intermediary for all European mathematicians, in contrast to the more limited possibilities of National Mathematical Societies.

The EMS promotes the guadrennial European Congress of Mathematics which awards ten prizes to young European Mathematicians. It also runs a series of mathematical weekends and supports European Summer Schools. Many EMS Committees are involved in a large spectrum of activities.

The EMS Newsletter continues to improve in content and is now a valuable source of information concerning job opportunities, new publications, European Conferences, etc. It regularly publishes interviews with prominent mathematicians as well as articles of general interest.

Among our ambitions today is the encouragement of a closer collaboration between

Pure and Applied Mathematics. We also plan to actively draw the attention of the younger generation of mathematicians to the beauty, diversity and importance of Mathematics.

Our concern is to make the EMS more visible and more efficient in its promotion of Mathematics within Europe. We must highlight the significance of Mathematics as a field of competence which is absolutely crucial to almost all areas of future Science and Engineering.

The creation of the European Research Council is an important step forward for Science in Europe and we all hope that the ERC will ultimately be financially self-sufficient and independent of Brussels' bureaucratic structure. Please pay attention to the web page: http://erc.europa.eu. There is a call for grant applications to young mathematicians, see document http://ec.europa.eu/ research/fp7/. It could be also useful to look at http://cordis.europa.eu/fp7/ideas/ home en.html and click on 'ERC Starting Independent Research Grant'. As far as I understand the most important site for us is: http://cordis.europa.eu/fp7/dc/index.cfm and click on: Ideas: 2006-12-22: ERC-2007-StG.

I would like to use this opportunity to advertise Zentralblatt (ZB). EMS is one of the three owners of ZB. It recently became clear that ZB is about to launch an Author database of high guality which could be a good alternative to MathSciNet. We have agreed with Springer that this database will be available, free of charge, to all users for three months starting from April 2007. Moreover, it also has been agreed that all EMS individual members will have free access to this database for at least two years. All members will be provided with a password and be able to log-in from any computer.

Finally, I wish you a very Happy New Year.

Yours sincerely,

Ari Laptev

🖉 Springer the language of science

New from Springer



A Topological Picturebook G. K. Francis, University of

Illinois at Urbana-Champaign, Urbana, IL, USA

Praise for George Francis's A Topological Picture**book** > The classic reference for how to present topological information

visually, full of amazing hand-drawn pictures of complicated surfaces.
> John Sullivan, Technische **Universitat Berlin**

1st ed 1987. 2nd printing 2007. XVI, 200 p. 87 illus., 4 in color. Softcover ISBN 978-0-387-34542-0 ► € 32,95 | £25.50

Numerical Mathematics

A. Quarteroni, R. Sacco, Politecnico di Milano, Milan, Italy; F. Saleri, Università di Milano, Milan, Italy

From the reviews of the first edition >

I found many of the examples to be quite interesting. I find no fault with any of the theoretical portions of the text. The authors are quite thorough in their discussion of the theory underlying each of the topics. This text uses MATLAB for programming the numerical codes.... SIAM REVIEW

2nd ed. 2007. XVIII, 655 p. 135 illus. (Texts in Applied Mathematics, Vol. 37) Hardcover ISBN 978-3-540-34658-6 ► € 59,95 | £46.00

springer.com

Mathematics and the Aesthetic

New Approaches to an Ancient Affinity

Coeditors: N. Sinclair, Michigan State University, East Lansing, MI, USA; D. Pimm, University of Alberta, Edmonton, AB, Canada; W. Higginson, Queen's University, Kingston, ON, Canada

This collection of essays explores the ancient affinity between the mathematical and the aesthetic, focusing on fundamental connections between these two modes of reasoning and communicating.

2007, XVI, 288 p. 65 illus., 14 in color. (CMS Books in Mathematics) Hardcover ISBN 978-0-387-30526-4 ► € 46,95 | £36.00

Mathematical Aspects of Classical and Celestial Mechanics

V. I. Arnold, Steklov Mathematical Institute, Moscow, Russia and CEREMADE, Paris, France; V. V. Kozlov, Lomonosov Moscow State University, Russia and Steklov Mathematical Institute, Moscow, Russia; A. I. Neishtadt, Space Research Institute, Moscow, and Lomonosov Moscow State University, Russia

From the reviews of the previous editions > ... The book accomplishes the goals it has set for itself. While it is not an introduction to the field, it is an excellent overview. ...
American Mathematical Monthly, Nov. 1989

3rd ed. 2006. XIII, 518 p. (Encyclopaedia of Mathematical Sciences, Vol. 3) Hardcover ISBN 978-3-540-28246-4 ► € 104,95 | £80.50

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THE INSTITUTE OF

The 2007 David Crighton Lecture Professor Sir Christopher Zeeman, FRS

Tuesday 24 April 2007 at 5 pm followed by a reception

Royal Statistical Society, 12 Errol Street, London EC1Y 8LX

What's wrong with Euclid Book V



Book V has long been considered to be the greatest achievement of Euclidean geometry. But Euclid forgot to define the ratio of two ratios leading to serious strategic consequences for Greek mathematics. In his lecture, Sir Christopher will introduce a new axiom to re-establish the propositions of Book V.

Before the lecture, Professor Sir Christopher Zeeman will be presented with the David Crighton Award. This is a medal awarded triennially in recognition of service to both mathematics and the mathematical community. It is co-sponsored by the London Mathematical Society and the Institute of Mathematics and its Applications.

Admission to the lecture is by ticket only. Tickets are free of charge and will be allocated on a first come first served basis. To reserve a place, please contact Susan Oakes at the LMS (oakes@lms.ac.uk or De Morgan House, 57-58 Russell Square, London WC1B 4HS) by Monday 16 April.

PROGRAMME COMMITTEE

Meeting October 2006

Here is a short description of the main items at the October meeting of Programme Committee. Programme Committee plans to put a piece like this into the *Newsletter* after each of its three big meetings, which take place in October, February and June. Comments from readers would be very welcome.

Council allocated us a total budget for 2006/2007 of £259,000, divided into the three main areas of activity for the committee: Grants, Society Meetings, and International. After reviewing the budget, and agreeing the subdivision of our budget between the various grant schemes, we then considered the new grant applications. We had 17 in Scheme 1, 10 in Scheme 2, 12 in Scheme 3, 5 in Scheme 4 and 1 in Scheme 5.

We discussed the new Young British and Russian Mathematicians exchange scheme, noting that we had not yet had any young British mathematicians applying to spend some time working with colleagues in Moscow. See the notice below.

We confirmed grants awarded to three conferences in Africa, organized under the umbrella of the African Mathematics Millennium Science Initiative. These grants are travel bursaries for research students in Africa attending conferences in Yaounde, Cameroon, in September, Gaborone, Botswana, in November, or Nairobi, Kenya, in December 2006.

The main strategic discussion at our October meeting was the Society Meetings. We were pleased to have regional representatives present while we reviewed all our meetings in 2006 and then considered our plans for 2007 (and beyond). We have had some very good and well-attended meetings, and the Committee is grateful to everybody who helps to make them such a success.

Turning to international meetings involving the Society, we reviewed our joint activity in Madrid with the Real Sociedad Matemática Española, and agreed that the Society should consider organizing similar events at future ICMs. We also discussed the plans for the British-Nordic Congress of Mathematicians to be held in Oslo in June 2009.

Finally, we were delighted to agree the proposal from Richard Thomas that the 2008 Invited Lectures be given at Imperial College by Fields Medallist Andrei Okounkov.

Stephen Huggett Programme Secretary

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Young British and Russian Mathematicians

The LMS and the Russian Academy of Sciences (RAS) would like to invite proposals for visits under our *Young British and Russian Mathematicians* scheme.

Each year, under this scheme, up to three young Russian mathematicians will spend a few weeks in Britain giving a series of survey lectures on the work of their Russian seminar, and up to three young British mathematicians will spend a few weeks in Russia giving a series of survey lectures on the work of their school. The LMS will meet the costs of Russian visitors and the travel costs of UK mathematicians, while the host institutions of the Russian Academy of Sciences will meet the latter's local expenses.

It is intended that any mathematician in either Britain or Russia may propose to host such a visit. The proposal should include:

- 1. name and brief cv of the visitor
- 2. brief description of the course of lectures
- 3. letter or email of agreement from the head of the host department.

The Scheme will be operated by the Programme Committee on behalf of the LMS and the Governing Body of Mathematical Sciences Division of the Russian Academy of Sciences and the Managing Committee of Moscow Mathematical Society for the Russians.

Preliminary enquiries, especially from British mathematicians interested in visiting Russia, are very welcome.

Programme Secretary, Stephen Huggett (tel: 01752 232710, email (s.huggett@ plymouth.ac.uk) or Sylvia Daly (tel: 020 7291 9971 email: grants@lms.ac.uk) or by post to De Morgan House.

Programme and Conference Fund

Members are reminded that the Society's Programme and Conference Fund is used to provide conference grants (Scheme 1), grants to visitors to the UK (Scheme 2), grants to support joint research groups (Scheme 3), collaborative small grants (Scheme 4) and international short visits (Scheme 5).

For full details of all the Schemes please see the Society's website (www.lms.ac.uk/ grants/index.html). Queries regarding applications can be addressed to the Programme

Please send proposals or enquiries to the Secretary, Stephen Huggett (tel: 01752 232710, email: s.huggett@plymouth.ac.uk) or the Secretary to Programme Committee, Sylvia Daly (tel: 020 7291 9971, email: daly@lms.ac.uk, Wednesday-Friday) who will be pleased to discuss proposals informally with potential applicants and give advice on the submission of an application.

The next deadline for receipt of applications (except Scheme 3) is 31 May 2007 and these will be considered at a meeting on 21 June 2007. Please note that grant applications will not be considered between mid-June and mid-October. Applications should be submitted well in advance of the date of the event for which funding is requested. Normally grants are not made for events which have already happened or where insufficient time has been allowed for processing of the application.

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Grants awarded between June and December 2006 Scheme 1

Applicant	Title	Grant
A. Sudbery	Exactly Solvable Systems in Quantum Field Theory: A Meeting to Celebrate Ed Corrigan's 60th Birthday	£2,357
A.W. Wickstead	Positivity V Plus Associated Instructional Conference	£4,624
R.J. Archbold	Operator Algebras and Applications	£4,000
R. Smith	Waves, Pollution and Modelling: A Celebration of the Work of Ron Smith in British Applied Mathematics	£1,410
D. Crowdy	Theoretical Fluid Dynamics in the 21st Century	£4,000
S. Dantchev	Algorithms and Complexity in Durham	£2,450
M.J. Collins	The Hall-Higman Theorems: Fifty Years On	£4,000
D.B. Duncan	Scottish Computational Mathematics Symposium	£1,250
T.D. Browning	Diophantine Equations via Analytic Number Theory	£1,450
V.A.R. Gould	Meeting on Semigroups, Categories and Automata in Honour of the 65th Birthday of Professor J.B. Fountain	£2,880
A.J.W. Hilton	21st British Combinatorial Conference	£2,000
A. Parker	Workshop of Cherednik Algebras	£4,674
H.R. Morton	Workshop on Khovanov Homology	£2,620
A. Parker H.R. Morton	Workshop of Cherednik AlgebrasWorkshop on Khovanov Homology	£4,67 £2,62

Scheme 1 (cont'd)

Applicant	Title	Grant
S. Stevens	Representations of <i>p</i> -adic Groups	£1,000
C. Smyth	25th Journees Arithmetiques 2007	£5,000
H.D. Macpherson	From Higman-Sims to Urysohn: A Random Walk through Groups, Graphs, Designs and Spaces	£5,000
V. Goryunov	Singularity Theory, Dedicated to C.T.C. Wall's 70th birthday	£2,000
A. Fring	Sixth International Workshop on Pseudo Hermitian Hamiltonians in Quantum Physics	£3,000
M. Broom	Mathematical Models in Evolution and Ecology	£4,450
C.J.B. Brookes (organiser D. Kenneally)	Postgraduate Group Theory Conference 2007	£2,400
K. Ball M. Csornyei	Real Analysis, Geometric Measure Theory, PDE and Banach Spaces	£4,480

Scheme 2

Visitor	To Visit	Grant
D. Anosov	Cambridge, Warwick, Liverpool	£1,150
B. Saussol	Surrey, Warwick, Imperial College	£800
T. Talipova	Loughborough, York, Keele	£1,200
S. Richard	Birmingham, Leicester, King's College London	
F. Bolley	Lancaster, Oxford, Imperial College	£750
P.H. Kleban	Nottingham, Cardiff, QMUL	£1,200
J. Hawkins	Surrey, East Anglia, Warwick	£1,000
D. Mubayi	QMUL, University College London, Cambridge	£800
Y. Zhou	Oxford, Durham, Bath	£1,200
S. Grabiner	Leeds, Nottingham, Lancaster	£1,000
Y. Berest	Leeds, Glasgow, Loughborough	£1,200
V. Buslaev	King's College London, Birmingham, Bath	£1,100
G. Miermont	Cambridge, Oxford, Bath	£1,020
K. Lu	Loughborough, Manchester, Swansea	£1,200
T.Eisenkölbl	QMUL, York, Cambridge	£1,170
	Visitor D. Anosov B. Saussol T. Talipova S. Richard F. Bolley P.H. Kleban J. Hawkins D. Mubayi Y. Zhou S. Grabiner Y. Berest V. Buslaev G. Miermont K. Lu T.Eisenkölbl	VisitorTo VisitD. AnosovCambridge, Warwick, LiverpoolB. SaussolSurrey, Warwick, Imperial CollegeT. TalipovaLoughborough, York, KeeleS. RichardBirmingham, Leicester, King's College LondonF. BolleyLancaster, Oxford, Imperial CollegeP.H. KlebanNottingham, Cardiff, QMULJ. HawkinsSurrey, East Anglia, WarwickD. MubayiQMUL, University College London, CambridgeY. ZhouOxford, Durham, BathS. GrabinerLeeds, Glasgow, LoughboroughV. BuslaevKing's College London, Birmingham, BathG. MiermontCambridge, Oxford, BathK. LuLoughborough, Manchester, SwanseaT.EisenkölblQMUL, York, Cambridge

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Scheme 3

Applicant	Institution	Title	Grant
V. Kolokoltsov	Warwick	Interactions and Non-commutativity	
D. Loghin	Birmingham Midlands Numberical Analysis Group		£997
C. Morgan	University College London	Set Theory and its Neighbours	£1,050
A.P. Fordy	Leeds	Classical and Quantum Integrability	£1,400
N. Snashall	Leicester	Bristol Leicester Oxford Colloquium	£1,400
X-M. Lei	Loughborough	East Midlands Stochastic Analysis Seminar	£1,200
A.F. Jarvis	Sheffield	North of England Algebraic Number Theory Group	£800
S. Pott	Glasgow	North British Functional Analysis Seminar	£1,000
C.W. Parker	Birmingham	Group Theory and Applications	£1,200
J. Brodzki	Southampton	K-theory and Analysis	£1,200
R. Sharp	arp Manchester Ergodic Theory		£1,200
J.P.C. Greenlees	Sheffield	Transpennine Topology Triangle	
W. Lionheart	Manchester	Multidimensional Inverse Problems	£1,200
R.B. Hoyle	Surrey	Patterns, Nonlinear Dynamics and Applications	£1,050
S. Rees	Newcastle North British Geometric Group Theory Seminar		£1,050
G.K. Sankaran	Bath	COW Algebraic Geometry Seminar	£1,400
C. Wood	Wood York Yorkshire Durham Geometry Days		£1,050
J.S.W. Lamb	Imperial College	London Dynamical Systems Group	£1,400

Scheme 4

Applicant	Institution	Collaborator	Institution	Grant
V.V. Kisil	Leeds	S.V. Rogosin	Belarus State	£500
K. Liu	Liverpool	B. Xu	Beijing Jiaotong	£500
A. Mason	Glasgow	P. Zalesskii	Brasilia	£500
G. El	Loughborough	V. Khodorovskii	St Petersburg	£500

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Scheme 4 (cont'd)

Applicant	Institution	Collaborator	Institution	Grant
N. Snashall	Leicester	E.L. Green O. Solberg D. Zacharia	Virginia Tech (USA) NTNU (Norway) Syracuse (USA)	£500
B. Nucinkis	Southampton	C. Martinez- Perez	Zaragoza	£500
A. Taormina	Durham	T. Eguchi	Токуо	£500
T.D. Hall	Liverpool	A. de Carvalho	Sao Paulo	£489
J.S.W. Lamb	Imperial College	J. Knobloch	TI Ilmenau, Germany	£500
J. Brodzki	Southampton	A. Pal	Indan Statistical Institution, Delhi	£500
H. Zheng	Imperial College	S. Tang	Fudan, China	£500
R. C. Griffiths	Oxford	A. Wakolbinger P. Pfaffelhuber	JW Goethe (Germany) LMU-München (Germany)	£500
C-H. Chu	QMUL	I.L. Kantor	Lund, Sweden	£500
C-H. Chu	QMUL	A.T-M. Lau	Alberta	£500
O. Davydov	Strathclyde	C. Manni	Rome	£600
A. Sakai	Bath	L-C. Chen	Fu-Jen (Taiwan)	£600
T. Porter	Bangor	E.G. Minian	Buenos Aires	£600
M. Dunajski	Cambridge	G. Sparling	Pittsburgh	£550

Scheme 5

Applicant	Visitor/Institution	To Visit	Grant
A. Blanco	T. Mewomo (Abeokuta, Nigeria)	QUB, Leeds	£1,900
M. van den Berg	S. Srisatkunarajah (Jaffna)	Bristol	£1,400

Scheme 6

Applicant	Institution	Collaborator	Institution	Grant
B. MacArthur	Southampton	R. Sanchez-Garcia	Sheffield	£350
K.A.J. White	Bath	D. Mital	Bristol RI/ Milton Keynes GH	£280

Spitalfields Day

as part of a workshop on

Geometric Flows and Related Topics

Mathematics Institute, University of Warwick Monday 26 March 2007

Gerhard Huisken (Max-Planck 'Albert Einstein Institute', Golm) Bruce Kleiner (Yale)

William P. Minicozzi II (Johns Hopkins) Richard Schoen (Stanford)

This Spitalfields Day is being held on the first day of a workshop on *Geometric Flows and Related Topics*. The workshop is part of a year-long symposium on *Low Dimensional Geometry and Topology* organised by Caroline Series.

The talks will be aimed at a general audience of mathematicians and graduate students. Anyone interested is welcome; let the Mathematics Research Centre (mrc@maths.warwick.ac.uk) know if you intend to come.

There are limited funds available to assist research students to attend, please apply to the Mathematics Research Centre (mrc@maths.warwick.ac.uk).

Scientific enquiries may be addressed to the organiser Peter Topping (P.M.Topping@warwick.ac.uk).

For further information visit www.maths.warwick.ac.uk/research/ 2006_2007/symposium/workshops/wks2.html.

CHANGES TO THE JCM EDITORIAL BOARD

The first editors of the LMS Journal of Computation and Mathematics were appointed ten years ago, under the leadership of Editor-in-Chief James Davenport. Since then, there have been relatively few changes to the list of editors and advisers, but the journal has now embarked upon a programme of rolling replacements, with a view to 'spreading the load' and allowing the journal's most prolific areas to be more carefully targeted.

John Cremona took over as Editor-in Chief in January 2006, supported by Editors Larry Paulson and Arieh Iserles; Dominique Duval has now retired as an editor. Likewise, Mark Chaplain, John Daugman, Luke Ong, and Leonard Soicher all retired at the end of 2006; our grateful thanks are due to all these, for their input and support for the journal in its early days.

We welcome the appointment of Andrew Thomason, Bjorn Poonen and Rich Schwartz as Editorial Advisers, and thank them for their willingness to serve in this capacity.

In 2007, Volume 10 of the JCM will appear; recent papers published in Volume 9 (www.lms.ac.uk/jcm/9/) include:

- R. Granger, D. Page and M. Stam On small characteristic algebraic tori in pairing-based cryptography
- L. Machado, F. Silva Leite and K. Hüper Riemannian means as solutions of variational problems
- S. Detinko and D.L. Flannery Computing in nilpotent matrix groups
 T. Satoh
- On polynomial interpolations related to Verheul homomorphisms
- M. Law, A.C. Niemeyer, C.E. Praeger and Á. Seress

A reduction algorithm for large-base primitive permutation groups

- M. Vaughan-Lee
- Simple Lie algebras of low dimension over GF(2)

• J. Roberts

Resolving the multitude of microscale interactions accurately models stochastic partial differential equations

• G. B. Lauder

A recursive method for computing zeta functions of varieties

- R. Gornet and J. McGowan Lens spaces, isospectral on forms but not on functions
- K. Krupchyk and J. Tuomela The Shapiro–Lopatinskij condition for elliptic boundary value problems

EULER'S MATHEMATICAL LEGACY

A one-day meeting on *Euler's Mathematical Legacy* will take place at the Mathematical Institute, 24-29 St Giles, Oxford, on 30 June, organised by the British Society for the History of Mathematics and the Open University's Centre for the History of the Mathematical Sciences. The speakers will be Jeremy Gray, John Coates, Keith Moffatt, Veeravalli Varadarjan, June Barrow-Green and Robin Wilson.

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Further information, including details of the lectures, will be available on the BSHM website. There is no charge for attending this meeting, but it would be appreciated if those intending to come would inform Robin Wilson (r.j.wilson@open.ac.uk) in advance.

SYMMETRY AND PERTURBATION THEORY CONFERENCE

A Symmetry and Perturbation Theory Conference (SPT) will be held from 2-9 June 2007 in Otranto, southern Italy. In the years the scope of these conferences has expanded to include also integrable systems, geometry of differential equations, and other topics. Full details and registration forms are on the web at www.sptspt.it/spt2007.html.

NEWSLETTER

THE LMS LIBRARY

A brief guide

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The Society's Library consists of a substantial collection of periodicals obtained in exchange for the Society's publications, copies of books and journals published by the Society and items acquired by the Society as review copies or gifts.

The LMS Library is integrated with the Mathematics section of the UCL (University College London) Library, a short walk from De Morgan House and within easy reach of both Euston and King's Cross stations (see map). Members of the London Mathematical Society thus have access to the combined resources of UCL and the LMS, and may use all the material available in the reading rooms and stores of the UCL family of libraries. The UCL Library Services online catalogue – eUCLid – can be found at http://library.ucl.ac.uk. The Mathematics collection is housed on the third floor of the UCL Science Library, which is on the Main UCL Campus.

Members wishing to use the Library should register to obtain a UCL Library card. Library cards require a passport size photograph and can be provided on the spot at the Membership Desk of the Science Library. Alternatively, members may register by post: a registration form can be downloaded from www.ucl.ac.uk/Library/borapp.shtml, and should be sent with your photograph to the Head of Membership at the address opposite.

UCL Library cards are issued for 12 months from the date of registration. Members with expired cards may renew their cards at the Science Library Issue Desk or by post. Cards for postal renewal should be sent to the UCL Library Services Head of Membership, accompanied by the member's current contact details and an indication as to whether the updated cards should be returned by post or retained for collection in person. Unregistered members will not be refused postal photocopying services (see below), but registration is essential before items can be borrowed.

Services available to registered members:

- Any item normally available for borrowing by staff of UCL may be borrowed. In addition, members may borrow bound volumes of mathematical periodicals provided they are at least five years old. Members may have up to TEN items on loan at any one time, and may place up to three concurrent reservations for material which is already out on loan. Loans may be renewed online or by telephone (provided that they have not been reserved by another Library user and are not overdue).
- MathSciNet and certain electronic journals can be accessed from a terminal in the Science Library designated for use by LMS members and other non-members of UCL. Single copies of articles (no more than one article per journal issue) may be printed or saved for the member's personal use. Printing is available at the same scale of charges which applies to members of UCL (currently 5p per page). MathSciNet can also be accessed from the Members' Room at De Morgan House.
- 3. Photocopying is available on a do-it-yourself basis on the same scale of charges as staff of University College. Members who are unable to meet the normal printout costs due to financial difficulties should apply to the LMS Librarian, Professor Rob Curtis (librarian@lms.ac.uk).
- 4. UCL Library also provides a rapid photocopying service by post. A copyright declaration form (available from www.lms.ac.uk/contact/copyright.pdf) must be signed and sent to the Library for each item requested before dispatch (a faxed copy is acceptable, provided an original is sent subsequently). For extra speed, copies may be ordered in advance by email for dispatch as soon as the declaration form arrives. The cost of this service is currently 15p per page.

5. Books may be borrowed by post by registered members of the Library. Requests for this may be made by post, email or fax. There is no service charge; the user is responsible only for the cost of *returning* books borrowed in this way, and any fines accrued by late return.

Contact details

Head of Membership, UCL Library Services University College London, Gower Street, London WC1E 6BT Tel: 020 7679 7953; Fax: 020 7679 7373; Email: lib-membership@ucl.ac.uk Loan and photocopy requests Email: interloans@ucl.ac.uk: Fax: 020 7679 2815

Book renewals

Online: http://library.ucl.ac.uk; Tel: 020 7679 7754

Library Catalogues Online Books: http://library.ucl.ac.uk EJournals: www.ucl.ac.uk/library/ejournal

Enquiries

UCL Science Library, DMS Watson Building Tel: 020 7679 7789; Email: Imsinf@ucl.ac.uk



NEWSLETTER



Riemannian holonomy groups and calibrated geometry

Dominic D. Joyce

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EPSRC NEWS

David Harman Programme Manager, Mathematical Sciences, has sent the following message:

'I am very pleased to have taken over the Mathematical Sciences Programme, so ably managed by Annette Bramley these past few years. I come to the Programme with a variety of experience within EPSRC, most recently concerned with the implementation of full economic costs and cross-Council convergence of grants policy – for which I will retain some responsibility.

'I plan to undertake a variety of visits in the New Year to meet members of the community and to learn about research and training in the Mathematical Sciences in general and in relation to the EPSRC programme in particular. I look forward to meeting as many of you as possible over the coming months.'

David Harman

tel: 01793 444304

email: david.harman@epsrc.ac.uk

Changes to the First Grant Scheme

There have been some changes/improvements introduced to the First Grant Scheme. Eligibility has been widened to all Fellowships supported externally provided the Research Organisation gives the fellow the same stature as permanent academic members of staff as described in the Funding Guide. EPSRC fellows are still excluded as they can apply for a grant with their fellowship application.

Grant holders now have three years or until the end of their probation period (whichever is the longer) to make their first application – this is to allow applicants time to establish their early track record if they are appointed to an academic position soon after completing their PhD. The overall period should still be 10 years from obtaining their PhD (exceptions considered on a case by case basis). The letter of support was frequently copied from the example given on the website. Now, Heads of Departments will answer a series of questions which will hopefully make the case stronger and subtly introduce internal peer review. For a trial period of 12 months, the upper limit of £250k has been removed. This is to make the scheme more like responsive mode and get applicants to apply for what they need.

Invited resubmissions: Proposals can be invited back as a resubmission e.g. if it's a great idea with a small point that can be quickly addressed, if departmental support is under par for an excellent proposal, etc. As for responsive mode this is an exception and not the rule so panel conveners need to challenge the panel robustly before a proposal is invited back in. Applicants will have three months from the date of the panel. It will not matter if they are at this point outside the three year eligibility rules. All other resubmissions will count as a second proposal and go to responsive mode.

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There will be no retrospective changes so grants already assigned referees and out to peer review cannot be amended. If these are withdrawn the new proposal will count as a second proposal.

ENGAGING MATHS ... at the heart of the UK Knowledge Economy – A showcase event for decision makers, opinion formers and the media.

In February EPSRC in conjunction with the CMS is holding a Terrace Reception at the House of Commons to showcase mathematical research. The event will be called *Engaging Maths* and is aimed at informing MPs, policy and decision makers, opinion formers and the media of the importance of and the pervasive nature of the mathematical sciences.

A brochure *Engaging Maths* will be launched at the event. This brochure contains a number of EPSRC funded case studies in areas which we hope will appeal to our core

audience for the event as well as the general public. These areas include: finance, climate and the environment, industry, health and biology, transport, security and communications & networks. The principal investigators of this research will attend the event to discuss their work in more detail. These brochures will be distributed widely after the event.

Banners on themes associated with the case studies will also be produced for the event. If you are interested in using this promotional material at public engagement/ awareness events you are holding after February, contact Katharine.Bowes@epsrc.ac.uk for further information.

Research Council Follow-on Fund: Call for proposals

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One of the major barriers to the take up and commercialisation of research results arising from the science base is the lack of funds to demonstrate the commercial potential of ideas. The Research Council Follow-on Fund aims to increase the level and accelerate the rate of commercialisation of research ideas arising from the BBSRC/EPSRC/NERC/PPARC research community. EPSRC participates in the Follow-on Fund through an annual call for proposals. This year, up to £1.5 million is available to support projects that will explore the commercial potential of EPSRC funded research. Some restrictions on applications exist: please refer to the call document for details. Closing date for applications: 4 pm on 16 February 2007.

Collaborating for Success through People

This call is to empower UK academic researchers and research groups with current EPSRC funding to develop novel ways of building connections across academic and user communities, both nationally and internationally. EPSRC is seeking a step change in outputs from its people-based activities. This call complements our strategic plan *EPSRC Strategic Plan 2006: Towards a Shared Vision*

of Tomorrow's Challenges, by empowering UK academic researchers and research groups to develop novel ways of building connections across academic and user communities, both nationally and internationally.

Proposals can include a range of activities, for instance, creating links across disciplines, international exchanges and industrial secondments. All areas of EPSRC's remit are covered in this call. Proposals must describe a range of people exchanges, demonstrating clear benefit to the engineering and physical sciences.

Up to £5 million is available to support packages of people-based activities tailored to the needs of the research group or individual researcher. Proposals should include a range of activities, for example, moving between disciplines, two-way international exchanges and industrial secondments.

This is a targeted call drawing together the ethos of a number of funding opportunities already available from EPSRC. The aim of the call is to enable new collaborations by providing flexible support for exchanges between researchers from a range of disciplines within and across academia and industry. Support is available through two routes:

- Research Group Research groups able to demonstrate substantial *current* EPSRC funding (for example, research consortia, large collaborative grant holders or centres) are invited to submit bids, to complement their existing activities. Proposals must include applicants from at least two UK research organisations and can be up to 18 months in duration.
- Single Academic Researcher Single academic researchers able to demonstrate current EPSRC funding and wishing to build new collaborations at an individual level are invited to submit bids, to complement their ongoing research. Proposals can be up to nine months in duration.

Closing date for proposals: 4 pm on 6 March 2007.

Ideas Factory: Coping With Extreme Weather Events

This is a call for participants to take part in a five-day sandpit to look for innovative ways to address the problem of coping with extreme weather events. Climate change is already happening – as the Stern Report on the Economics of Climate Change identifies, even if we could stop all greenhouse gas emissions tomorrow our climate would continue to change due to global warming driven by over a century of manmade emissions. As a consequence, the risk of extreme weather events such as flooding, heatwaves and storms will continue to increase over the next half century. Today's extremes will become tomorrow's norms. Whilst research is being undertaken into many aspects of weather events - for example prediction, warning systems, infrastructure effects, health effects, disaster reaction – there is no common forum to look at how science and engineering can improve society's ability to cope with extreme weather events which have systemic effects.

The engineering and physical science research community working with colleagues in other research areas, such as the economic, social and environmental sciences can gain a better understanding of the effects of extreme weather events and devise innovative and coherent solutions. The concept of the Ideas Factory is to organise interactive workshops (sandpits) on particular topics, involving 20-25 participants. The focus for this sandpit is to explore long term strategies for coping with extreme weather events. Topics may include:

- Analysis of the impact of extreme weather events on infrastructure and human health.
- Requirements for infrastructure tolerance to extreme weather events.
- Prediction methods and impact modelling with a focus on multidisciplinary research; early warning systems.
- New building/structure design systems to cope with extreme weather demands.

- Analysis of existing public buildings/ structures to assess weather risk.
- River flood alleviation and coastal flooding analysis; urban flooding prevention planning.
- Impact of extreme weather events on the energy infrastructure.
- Issues surrounding uptake how can engineering offer solutions that will be acted on?
- Emerging challenges in the area of adaptation to extreme weather events.

EPSRC has allocated £1.5 million to fund research projects arising from the sandpit. These research proposals will contain genuinely novel and adventurous approaches that address the problem of coping with extreme weather events. The sandpit will take place on 18-20 April and 10-11 May 2007. The closing date for applications is Wednesday 7 March 2007.

A full list of current calls can be found on the website at: www.epsrc.ac.uk/ CallsForProposals/. For details on the Mathematical Sciences Programme visit: www.epsrc.ac.uk/ResearchFunding/Programmes/ MathematicalSciences/. 21

5th EUROPEAN CONGRESS OF MATHEMATICS

Minisymposia call for proposals

At the Fifth European Conference of Mathematics (5ECM) taking place in Amsterdam from 14-18 July 2008, minisymposia on various topics ranging over all of mathematics will be held. Minisymposia typically consist of one 45 minute lecture and three half hour lectures. We call for organizers to submit propositions. A proposal should be approximately one page and contain:

- The names of the organizers (or organization, such as research networks)
- A short description of the topic and its importance for contemporary mathematics
- Names of proposed speakers

Proposals should reach the Scientific Committee before **1 April 2007** (email: lex@cwi.nl).

WOMEN IN MATHEMATICS DAY 2007

The next Women in Mathematics Day will be held on **27 April** at De Morgan House. Sessions will include talks by practising women mathematicians in a variety of appointments and at different career stages.

The organisers would be very grateful if all members could encourage women mathematicians, particularly students (including final year undergraduates) and those at an early stage in their career, to attend this meeting. It is hoped that an opportunity to see women who are active and successful in mathematics, and to meet them informally will be beneficial. Feedback from previous meetings has shown that participants find this useful. While this is an occasion particularly for women active in mathematics to get together, men are certainly not excluded.

Postgraduates, postdocs or research assistants interested in giving a talk during the afternoon session should contact Dorothy Buck (d.buck@imperial.ac.uk).

Draft Programme

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10.30-11.00 Registration and coffee

11.00-12.45 Morning Session

Professor Caroline Series (Warwick) Continued Fractions and Hyperbolic Geometry

Professor Nancy Nichols (Warwick) The Weather Modelling Problem

Dr Sarah Waters (Nottingham) Mathematical Methods in Virology

12.45-13.45 Lunch

13.45-16.00 Afternoon Session Postgraduate/Postdoc speakers

16.00-16.30 Tea

The meeting will be followed by an early evening meal for those able to stay. Limited funds are available to help with the travel costs of students attending the event. Further details are available from Isabelle Robinson at the Society (contact details below).

To register contact Isabelle Robinson, Administrative Officer (robinson@lms.ac.uk). The day is free for students and £5 for all others – payable on the day.

MATHEMATICAL MODELS IN EVOLUTION AND ECOLOGY

Mathematical modelling plays a central and increasingly important role in evolution and ecology. The object of the meeting is to show the latest development of mathematical models in evolution and ecology and to demonstrate the important role of such modelling through this research to a new generation of researchers. The programme will include keynote talks and sessions in the following, and other, areas: population genetic models; the modelling of epidemics; the use of game theory to model the behaviour of biological populations. The last of these will be a central theme, as befits a conference at the university where John Maynard Smith carried out his pioneering work. There will also be a session on research collaboration between biologists and mathematicians, aimed at encouraging the development of new collaborations.

The conference will be held at the University of Sussex on 20-21 September. Confirmed keynote speakers are:

- Chris Cannings (University of Sheffield)
- Sergey Gavrilets (University of Tennessee)
- Patsy Haccou (Leiden University)
- Yoh Iwasa (Kyushu University)
- John McNamara (University of Bristol)
- Karl Sigmund (University of Vienna)

Registration and submission of abstracts are now open. Further information can be obtained by contacting Mark Broom or Fiona Childs via the conference website www.maths.sussex.ac.uk/MMEE2007.

The organisers are grateful for support from: the London Mathematical Society, the British Ecological Society, and the Department of Mathematics and the Department of Biology and Environmental Science at the University of Sussex.

MULTISCALE ANALYSIS AND COMPUTATIONS IN STOCHASTIC DIFFERENTIAL EQUATION MODELLING

A workshop on Multiscale Analysis and Computations in Stochastic Differential Equation Modelling 2007 (macsdiem07) will be held from 22-24 February at the University of Sussex. The main purpose of the workshop is to foster communication on current research among the network's members as well as external researchers, with a special focus on analytical and computational aspects of multiscale problems arising in stochastic differential equation modelling.

For further information contact the organizers are: O. Lakkis (o.lakkis@sussex.ac.uk), G. Pavliotis (g.pavliotis@imperial.ac.uk) and P.Plechac (p.plechac@warwick.ac.uk) or visit the website: www.maths.warwick.ac.uk/ multiscale.



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NEWSLETTER

The London Mathematical Society

CECIL KING TRAVEL SCHOLARSHIP

The London Mathematical Society annually awards a £5000 Cecil King Travel Scholarship in Mathematics to a young mathematician of outstanding promise. The Scholarship is awarded to support a period of study or research abroad, typically for a period of three months.

The award is competitive and based on a written proposal describing the intended programme of study or research abroad and the benefits to be gained from such a visit. A shortlist of applicants will be selected for interview.

Applicants should normally be nationals of the UK or Republic of Ireland, either registered for or having recently completed a doctoral degree at a UK University.

Applications should be made using the form available on the Society's website (www.lms.ac.uk) or from Isabelle Robinson at the Society (robinson@lms.ac.uk). The closing date for applications is **Friday 23 February 2007**. It is expected that interviews will take place in London in April.

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

DYNAMICS DAYS

The 27th Dynamics Days Europe is a joint venture between Loughborough University and the University of Nottingham. The meeting will take place at Loughborough University from the morning of Monday 9 July to lunchtime on Friday 13 July.

There will be ten plenary talks, each of which is associated with a minisymposium. Contributed talks in these and any other areas of nonlinear dynamics are welcomed. The organisers are also soliciting proposals for special themed sessions of contributed talks. **Minisymposia:**

- Dynamical systems methods for fluid mechanics Plenary speaker: Gene Wayne (Boston), Organiser: Mariana Haragus (Besancon)
- Pattern formation Plenary speaker: Tom Mullin (Manchester), Organiser: Rebecca Hoyle (Surrey)
- Coupled cell networks Plenary speaker: Kurt Wiesenfeld (Georgia Tech), Organiser: Alastair Rucklidge (Leeds)

- Integrable systems Plenary speaker: Darryl Holm (Imperial College),Organiser: Rod Halburd (Loughborough)
- Complex systems in biology Plenary speaker: Kunihiko Kaneko (Tokyo), Organiser: Stephen Coombes (Nottingham)
- Hamiltonian systems and n-body problems Plenary speaker: Bruno Eckhardt (Marburg), Organiser: Massimiliano Berti (Naples)
- Wave chaos Plenary speaker: Mathias Fink (Paris), Organiser: Thomas Guhr (Lund)
- Granular media: theory and applications Plenary speaker: Ko Van der Weele (Patras), Organiser: Michael Swift (Nottingham)
- Nonlinear laser dynamics Plenary speaker: Daan Lenstra (Eindhoven), Organiser: Nathan Kutz (Seattle)
- Nano-electromechanical systems Plenary speaker: Keith Schwab (Cornell), Organiser: Antti Pekka Jauho (Lyngby)

The deadline for regular registration and abstract submission is **5 April**. Full information is given on the conference website at www.lboro.ac.uk/dynamicsdays07. The meeting is supported by an LMS conference grant.

GEOMETRY OF RIEMANN SURFACES

A conference on the Geometry of Riemann Surfaces, to celebrate the 65th birthday of Bill Harvey, will be held from 30 June to 4 July. The conference will be held at the Anogia Academic Village, a small conference centre of the University of Crete. Participants will be accommodated at the guest house of the centre and at private guest houses in the village. The cost of registration and half board accommodation for the duration of the conference is estimated at €200. (Some funds may be available to support the participation of young researchers.)

Organizing Committee: Fred Gardiner (Brooklyn College, CUNY), Gabino González, (Universidad Autónoma de Madrid) and Christos Kourouniotis (University of Crete). For more information visit www.math.uoc.gr/ AXAK/RiemannSurfaces or contact Christos Kourouniotis (chrisk@math.uoc.gr, fax: +30 2810 393 881) Department of Mathematics, University of Crete, GR-714 09 Iraklio, Crete, Greece.

FASCINATING FRACTIONS!

How do you feel about fractions? Love them or hate them?

Lynne McClure will be giving this lecture, aimed at primary school level (age range 9-11) on Thursday 22 March from 2.00 pm – 3.00 pm and repeated on Friday 23 March from 11.00 am – 12.00 pm at the Centre for Mathematical Sciences, Clarkson Road, Cambridge.

Although Lynne lives in Scotland, she works with and for teachers, students and children all over the UK and abroad, including in Cambridge where she works with the NRICH maths project. She likes to think that her enthusiasm for the beauty and power of mathematics is infectious and tries to persuade those who read her books or hear her speak that maths is just the best! She edits the Mathematical Association's **Primary Mathematics** journal and appears on Teachers TV.

Admission to all lectures is free but by ticket only: email mmp@maths.cam.ac.uk stating clearly the date and title of the lecture you would like to attend, a postal address and how many tickets you require.

For more information about the lecture programme visit mmp.maths.org/events/ eventlist.php or contact Charlotte Goodburn, Millennium Mathematics Project, Centre for Mathematical Sciences, Wilberforce Road, Cambridge CB3 0WA (tel: 01223 766839, fax: 01223 765900, web www.mmp. maths.org.uk).

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REVIEWS

Evolutionary Dynamics (Exploring the Equations of Life) by Martin A Nowak, Harvard University, 2006, 384 pp, £22.95, ISBN 0-674-02338-2.

Its pleasant to be asked to review a book one would probably have purchased anyway and this is a well-presented, accessible text with attractive typesetting, clear illustrations, and a direct, narrative tone.

The author attempts ambitious compression, covering a wide variety of topics in fourteen swift, and semi-independent chapters averaging only twenty-two pages each. At the end of this book, you are left surprised by how much is achieved, and the notable omissions – such as, a proper look at genetics or at sexual selection are at least acknowledged honestly. The book closes with a well-chosen list of references: most being easily accessible from university libraries. I found the detailed chapter commentaries, relating what was

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said to what was referenced, more than made up for any carping I might have made at what was left out.

The author's aim is to 'present those mathematical principles according to which life has evolved and continues to evolve'. It commences with Darwin's attractive quotation: 'I have deeply regretted that I did not proceed far enough to at least understand something of the great leading principles of mathematics; for men thus endowed seem to have an extra sense.' Coincidentally, I had recently come across exactly the same quotation in Nahin's book 'Dr Euler's fabulous formula', and while it might make mathematicians smile shyly, you can't help wondering about Darwin's conception of these great leading principles and why it was, if they were so great, that he took no further steps in the direction they were leading. The Darwin quote that I have been chuckling over for years is that 'a mathematician is a blind man in a dark room looking for a black

blind man in a dark room looking for a black cat which isn't there', and while this is almost certainly apocryphal, its interesting to speculate about the form 'the evolution of species' might have taken had Darwin been more temperamentally mathematical, or even whether it could have been written at all.

A novel feature of this book is the importance it gives to language. This was the area that I am ashamed to say was most unknown to me, and which left me still puzzling over what I had read. The notion that Gold's learning-theory work could in some sense support Chomsky's early views about Universal grammars has sent me scurrying to Gold's original papers (readily available from the web). I'm not convinced but I am intrigued and I cannot see why one could not employ much the same argument in relation to the recurrent feeling physicists have that they are close to a theory of everything, or, more grandly, to support a realist view of mathematical structures.

Other areas that are well treated include evolutionary game theory and birth and death processes in finite populations.

This book covers a wide range of topics in a clear, introductory way. It would be supplanted by detailed study of any of them, but it provides an attractive and coherent view of them all. It would be a good book to give a potential post-graduate student who wanted to have some understanding of the ideas that he or she would be studying. It would also make an attractive addition to a university library or the bookshelf of anyone interested in a modern treatment of the promised lands where mathematics and biology meet and negotiate.

Bob Lockhart Oxford University

Gödel's Theorem. An incomplete guide to its use and abuse by Torkel Franzén, Wellesley, Mass.: A.K. Peters, 2005. ix +172 pp, £15, ISBN 1-56881-2338-8.

Kurt Gödel (1906-1978) published his two theorems on the incompletability of axiomatised first-order arithmetic (FOA) in a paper in 1931. Specialists in mathematical logic and the foundations of mathematics absorbed them fairly quickly, but the mathematical community in general did not pay significant attention until the late 1950's¹ They were then also diffusing among some philosophers, as well as in the rapidly developing profession of computer scientists; and especially from the late 1970s they were becoming widely enough known to serve to all and sundry as an icon for negative results, impossibilities, and so on. Familiarity bred the usual inability accurately to understand their content and consequences. The book under review is a welcome tourist's guide not only to the correct but also to many incorrect interpretations of the theorems, both in their immediate contexts and in wider circumstances.

The first theorem states that there exists at least one proposition P that can be stated in

FOA such that neither P nor not-P is provable in it. The theorem (in a slightly strengthened form, due to J.B. Rosser in 1936) assumes that FOA is consistent: the second theorem (also sometimes called the 'corollary') then states that this consistency cannot be proved within FOA itself (p.34). Of course, if FOA were inconsistent then its consistency could be proved within it, since every sentence of FOA could then be proved. Part of the point of the second theorem is that the metatheory of FOA has to be richer than that of FOA, at least for the needs of this proof. The web of self-reference involved here is very characteristic of both theorems, and a major source of the misunderstandings; the author might have emphasised the distinction between theory and metatheory a little more, since recognition of its central importance is itself a notable aspect of Gödel's paper.

Among the sources of misunderstanding treated by the author, the following are brought out well. (1) The theorem is concerned with (part of) arithmetic, not with axiomatised mathematical or logical theories in general, some of which are indeed complete. (2) The sense of incompleteness in the first theorem, as stated above, is called

EVOLUTIONARY

MARTIN A. NOWA

'negation incompleteness' by logicians, and should not be confused with other senses. (3) The first theorem says nothing about whether P or not-P is provable using means outside of FOA, or whether either proposition is known in some other sense. (4) Nor does it directly address the scope, and especially the limitations, of consciousness, or of other sciences such as physics, since forms of (in)completeness may obtain there that are not based upon arithmetic.

The author reviews these and several other pitfalls, and provides a useful bibliography (from which, however, Gödel's paper is missing!). My only reservation about his treatment concerns axiomatic set theories, which are important examples of incompletable mathematical theories. He says of one version (ZFC) that its axioms are 'utterly compelling' (p.105); but for example, the axiom of choice is on the list, so that this claim could be disputed. Indeed, on p.151 he rehearses some of the doubts about forms of the axiom of infinity there.

While the text assumes some familiarity with the general context and techniques of foundational studies, non-specialist readers should gain a fine impression of the issues and confusions that arise when a technical theory becomes too well known! It is much to be regretted that the author died soon after his book appeared.

1. Grattan-Guinness, I. 2007. 'The reception of Gödel's 1931 incompletability theorems by mathematicians, and some logicians, up to the early 1960s', in *Horizons of Truth. Proceedings of the Kurt Gödel International Centenary Conference in Vienna 2006*, to appear.

I. Grattan-Guinness Middlesex University 27



NEWSLETTER

EPSRC

An Introduction to Multiscale Methods



University of Warwick, 15-20 April 2007 Organisers: G.A. Pavliotis and A.M. Stuart

The course provides an introduction to the theory of multiscale methods, and the techniques of averaging and homogenization in particular. The theory will be exemplified by application to ordinary and stochastic differential equations, Markov chains and partial differential equations.

The course will comprise 10 introductory lectures on averaging and homogenization by G.A. Pavliotis (Imperial, on *partial differential equations*) and by A.M. Stuart (Warwick, on *stochastic processes*). There will also be five guest lectures by experts in multiscale phenomena, including: Assyr Abdulle (Edinburgh, on *Computational Methods*); Bjorn Engquist (Austin, on *The Heterogeneous Multiscale Method*) and John Willis (Cambridge, on *Solid Mechanics*). In addition there will be tutorial sessions run by graduate students working in the field.

The course is aimed primarily at graduate students from mathematics and statistics, but will also be of interest to students working in closely allied areas of engineering and physics. Furthermore, postdoctoral and young researchers are also encouraged to attend. Further information about the course will appear at: www.maths.warwick.ac.uk/~stuart/mult.html.

All research 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; for non-EPSRC research students, their department might be prepared to pay the fee). Overseas students, Postdocs and whose working in industry must pay the full subsistence costs of £260, plus a registration fee of £250, making a total of £510 for this course. All participants must pay their own travel costs (for EPSRC funded students, this should be covered by their DTA).

Applications should be made using the registration form available on the Society's website at: www.lms.ac.uk/activities/rmc/sc/34poster.html.

Numbers will be limited and those interested are advised to make an early application. The closing date for applications is **Friday 28 February 2007**. 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.

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

A.J.C. ALLEN

The appearance of a photograph of A.J.C. Allen in the last edition of the *Newsletter* (January, No. 355) prompts me to add a rider. In 1884 Allen married Edith M.L.L. Grimley, who was the daughter of Horatio Nelson Grimley. This latter was also a mathematician, and two of his claims to fame were that he was a founder member of the London Mathematical Society (see Rice, Wilson and Gardner, *From student club to national society*, Hist. Math. 22 (1995), 402-421), then later, in 1872, he became the first Professor of Mathematics and Natural Philosophy at the newly founded University College of Wales, Aberystwyth.

Colin R. Fletcher, Aberystwyth



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KEY SOCIETAL ISSUES

Tuesday 27 February : Evening Lectures Hardy Room, De Morgan House, 57 Russell Square, London WC1B 4HS

5:00pm – 5:45pm: Mathematical Modelling of Homelessness and Housing Allocation Professor Andrew A. Lacey (School of Mathematical & Computer Sciences, Heriot-Watt University and the Maxwell Institute for Mathematical Sciences) Variation in numbers of homeless households, and of those of people housed in the private sector and of those residents in council housing, can be studied by using a simple mathematical model. Analysis of the model illustrates how changing priorities can affect both waiting times and sizes of waiting lists for council accommodation. Time scales which appear in the model indicate that the determination of steady states will not always suffice to predict the sizes of waiting lists over periods of practical interest. Sensitive dependence on the amount of housing stock is also apparent.

5:45pm - 6:15pm: Break for refreshments

6:15pm – 7:00pm: What Do Crime and Diseases Have in Common? Dr Shane D. Johnson (Jill Dando Institute of Crime Science, UCL)

Crime conforms to a Pareto law of concentration. A small fraction of offenders commit the majority of crime, a high proportion of crime occurs in a small number of areas, and a small number of victims experience a disproportionate risk of (re)victimization. Such findings inform Criminological understanding and the crime reduction enterprise. However, until recently, the stability of crime patterns has been largely overlooked. In this presentation, I will discuss our recent research which has focused on patterns of victimisation in space and time. The results of a series of studies conducted using a variety of methods will be briefly discussed and the practical and theoretical implications of the work considered.

Frank Smith and the LIMS Committee

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

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

CONSTRUCTION AND PROPERTIES OF BAYESIAN NONPARAMETRIC REGRESSION MODELS

(6-10 August 2007)

in association with the Newton Institute programme entitled Bayesian Nonparametric Regression: Theory, Methods and Applications (30 July to 24 August 2007)

Workshop organisers: Nils Hjort (Oslo), Chris Holmes (Oxford), Peter Müller (Texas) and Stephen Walker (Canterbury).

Theme of workshop: Modern Bayesian nonparametric analysis was introduced by Ferguson with the development of the Dirichlet process in the 1970s. Since then there has been rapid progress in both theoretical and applied work, the latter usually relying on Markov chain Monte Carlo simulation methods. The outstanding challenges include the construction and properties, such as consistency issues, of Bayesian nonparametric regression models. This is the theme of the workshop.

Bayesian nonparametric inference relies on the construction of an infinite dimensional probability distribution on function spaces. Typically this is a space of density functions, but could also be hazard rate functions, distribution functions or some other function related to modelling observations. The probability models have traditionally been adapted from stochastic process; such as Lévy processes. These probabilities act as the prior distribution and combine with the data to provide the posterior distribution.

Another strand of Bayesian nonparametric inference involves the construction of regression functions. This is concerned with how observables relate to each other, where one type of observable (the predictor observable) is used to predict another type (the dependent observable). To date the functions used to do this have been quite different to those used for modeling density functions. For example, splines and wavelets are recent popular choices, and these have been used to model means and variances sitting within a class of parametric density functions.

Recent attempts have been made to strengthen the connections between these two area of Bayesian nonparametric research. The ultimate goal is obtain suitable classes of fully Bayesian nonparametric regression models. The current standard is semi-parametric; where if density functions are modelled nonparametrically, the regression function is modeled parametrically, and if the regression model is nonparametric then the density function which carries it is modeled parametrically.

The full Bayesian nonparametric regression model would involve the construction of a collection of density functions; one for each distinct predictor variable. The key question is how to connect up all the density functions to provide suitable interactions. Leading international researchers in Bayesian nonparametric methods, both theory and applied, will be brought together to discuss and tackle this outstanding issue in Bayesian research.

Confirmed speakers: Subhashis Ghosal (North Carolina), Bani Mallick (Texas), Lancelot James (Hong Kong), Mark Steel (Warwick), Yongdai Kim (Seoul), Wes Johnson (California).

Location and cost: The workshop will take place at the Newton Institute and accommodation for participants will be provided in a single study bedroom with shared bathroom at Wolfson Court. The workshop package, costing £450, includes accommodation, breakfast and dinner from dinner on Sunday 5 August to breakfast on Saturday 11 August 2007, and lunch and refreshments during the days that lectures take place. Participants who wish to attend but do not require the workshop package will be charged a registration fee of £90. Self-supporting participants are very welcome to apply.

Further information and application forms are available from the web at: www.newton.cam.ac.uk/ programmes/BNR/bnrw01.html. Completed application forms should be sent to Tracey Andrew, Programme & Conference Secretary, Isaac Newton Institute, 20 Clarkson Road, Cambridge CB3 0EH or via email to: t.andrew@newton.cam.ac.uk.

Closing date for the receipt of applications is **30 April 2007**.

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/meetings/calendar.html).

FEBRUARY 2007

9 LMS Meeting, Mary Cartwright Lecture, London (356)

16 Edinburgh Mathematical Society Meeting, Edinburgh (350)
16 Open Day, King's College London (354)
22-24 Multiscale Analysis and Computations for Stochastic Differential Equation Workshop, Sussex (356)
27 Key Societal Issues, LIMS Meeting, London (356)

MARCH 2007

4-7 21st Century Mathematics
Conference, Lahore (353)
16 Edinburgh Mathematical Society
Meeting, Dundee (350)
22 Fascinating Fractions, Cambridge (356)
23 Fascinating Fractions, Cambridge (356)
26 Spitalfields Day, Warwick (356)
26-30 Theory of Highly Oscillatory
Problems Workshop, INI, Cambridge (353)
26-31 Geometric Flows and Related Topics
Symposium Workshop, Warwick (350)

APRIL 2007

10-14 LMS Invited Lectures The Geometric Langlands Correspondence, Oxford (355)
11-13 Postgraduate Group Theory Conference, Cambridge (355)
15-20 An Introduction to Multiscale Methods, LMS-EPSRC Short Course, Warwick (356)
16-19 BMC, Swansea (354)
17-19 BAMC, Bristol (354)
20 LMS Midlands Regional Meeting, Loughborough 24 David Crighton Lecture, London (356)
27 Edinburgh Mathematical Society
Meeting, Stirling (350)
27 Women in Mathematics Day,
De Morgan House, London (356)

MAY 2007

14-13 Jul Braids Programme, Singapore (353)
18-20 Midwest Geometry Conference, Iowa, USA (350)
22 Multiplying and Dividing Whole Numbers, Gresham College London (355)
25 Edinburgh Mathematical Society Meeting, Aberdeen (350)
29-1 Jun Applied Stochastic Models and Data Analysis Conference, Crete, Greece (355)
30 LMS South West & South Wales Regional Meeting, Cardiff

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JUNE 2007

2-9 Symmetry and Perturbation Theory Conference, Otranto, Italy (356)
18-19 Hamiltonian Dynamical Systems and Applications Seminar, Montreal (355)
22 LMS Meeting, London
30 Euler's Mathematical Legacy Meeting, Oxford (356)
30-4 Jul Geometry of Riemann Surfaces Conference, Crete (356)

JULY 2007

2-6 Effective Computational Methods for Highly Oscillatory Problems Workshop, INI, Cambridge (353)
9-12 3-Manifold Geometry and Topology Symposium Workshop, Warwick (350)
9-13 27th Dynamics Days Europe, Loughborough (356)
13-14 David Epstein 70th Birthday Celebration Symposium Workshop, Warwick (350)
16-20 ICIAM 2007, Zürich, Switzerland (349)
16-21 Hyperbolic Structures on 3-Manifolds and Large Scale Geometry of Teichmüller Space Symposium Workshop, Warwick (350)

G.J. ALLMAN LMS member 1882-1892



George Johnston Allman, LL.D. Dublin, DSc, FRS Professor of Mathematics Queen's College Galway Senator of the Royal University of Ireland.