THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 285

September 2000

FORTHCOMING SOCIETY MEETINGS Friday 20 October 2000 - London G.W. Gibbons, S.W. Hawking Friday 24 November 2000 - London Annual General Meeting T.C. Chinburg, M.J. Taylor (Presidential Address) 10 February 2001 - Oxford Mary Cartwright Lecture C.S. Morawetz Wednesday 28 February 2001 - Birmingham Inaugural LMS Regional Meeting (Midlands)

COUNCIL DIARY 23 June 2000

June's Council meeting saw the presentation by the Treasurer of the Annual Budget, which was approved. Our financial situation is healthy. We are increasing our expenditure on charitable mathematical activities; this seems to be in keeping with our status as a charity, and so Council was not penitent, despite an apparent drop in our income (hard to estimate since an accurate estimate of our publication surplus is not yet available), but felt that many would think we should spend even more in this area. Council also approved small increases in subscriptions and periodical prices.

Council continued the discussion sparked off by Ken Brown's visit to Africa in January of ways in which the Society might usefully support mathematics within Africa. It wishes to support exchanges in both directions with African mathematicians. The present scheme 5 will not easily extend for this purpose, and a new scheme may be needed. Proposals for exchanges will be invited from UK mathematicians. It was noted that some excellent links already exist, but since it was recognised that many Africans do not have existing contacts with the UK, it seemed that the LMS would need to facilitate the creation of further links. The Society also agreed to give start-up support to the new Journal of the Southern Africa Mathematical Sciences Association, which will give a forum within the region for locally produced mathematics.

The President has now returned from a very enjoyable and successful visit to St Petersburg and Moscow. During his visit he discussed LMS proposals for a 'prize fellowship' scheme, which might finance brief visits by young mathematicians to the UK and afterwards offer them some continuing financial support back home. The details of such a scheme would need to be carefully worked out in consultation with leaders of the mathematical community within the fSU. The Society is anxious to provide support within the fSU and Eastern Europe, and not to encourage a brain drain; it is feared that schemes of this nature can often have that effect. There was also strong support in Moscow and St Petersburg for a proposal for a joint mathematical meeting with the LMS; this is being considered.

Within Britain, joining forces with both the Joint Mathematical Council and the Royal Society in order to present a broader viewpoint of mathematics (it is felt that the LMS may be seen by the Government as being concerned only with research level mathematics and not with mathematics as a whole) the LMS continues to put pressure on the Government to set up an advisory committee for policy on mathematics education.

The Society continues to settle comfortably into De Morgan House. In its continuing effort to reduce administrative burdens on mathematicians and enable them to think about their science, and in recognition of the heavy work load carried by the current in-house staff, Council has approved the appointment of a new secretary at De Morgan House.

MathFIT, the joint EPSRC-LMS initiative to foster research at the interface between mathematics and computer science, is being expanded by EPSRC. For the next three years £1.5 million annually will be ringfenced for MathFIT activities grants, and there will be a specific annual call for proposals, with the first call this October (see page 12). EPSRC is anxious to publicise this scheme, is appointing Iain Stewart, Professor of Computer Science at Leicester and Chair of the LMS Computer Science Committee, as a special MathFIT coordinator, and has already organised 4 regional meetings to explain what it is all about (more are planned). EPSRC is particularly keen to encourage applications to the scheme from mathematicians; currently most applications come from computer scientists.

Sarah Rees

LMS SUBSCRIPTIONS AND PERIODICALS

The annual subscription to the Society for the 2000-01 session shall be: Ordinary Members £22.50; Reciprocity Members £11.25; Associate Members £6.00. The prices of the Society's periodicals to Ordinary, Reciprocity and Associate Members for the 2000-01 session shall be: *Proceedings* £45.00; *Journal* £45.00; *Bulletin* £22.50; *Journal of Computation and Mathematics* £20.00.



Professor Zizcenko Professor Gonchar Professor Taylor Mrs Taylor Professor Maltsev

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LONDON MATHEMATICAL SOCIETY

Spitalfields Day

Thursday 12 October 2000

Isaac Newton Institute for Mathematical Sciences Seminar Room 1, 20 Clarkson Road, Cambridge

IN SEARCH OF THE IDEAL KNOT

Organiser: Renzo L Ricca (UCL)

Programme Theme:

Six world specialists will present results and latest discoveries on mathematical and physical knots. From soliton knots to electromagnetic knots, from elastic knots to chemical and biological knots, we shall follow our experts in a fascinating search for the ideal knot.

09.30 - 10.00 10.00 - 11.00	Coffee & Registration Dr Andrzej Stasiak (Lausanne) Ideal knots and physical knots
11.00 - 12.00	Professor Antti Niemi (Uppsala) Field theory realizations of knots and links
12.00 - 13.00	Professor Art Winfree (Arizona) Knotted phase singularities in motionless media
13.00 - 14.00	Lunch at the Institute
14.00 - 15.00	Professor Antonio Fernandez-Ranada (Complutense) Electromagnetic knots
15.00 - 16.00	Professor John Maddocks (EPFL) Global curvature, thickness, ideal shapes and self-contact
16.00 - 16.30	Tea
16.30 - 17.30	Professor De Witt Sumners (Florida State) <i>Knots in DNA</i>
17.30 - 18.00	Wine Reception

These lectures are linked to the Isaac Newton Institute Programme on Geometry and Topology of Fluid Flows

Anyone interested is welcome to attend. Lunch will be provided at a nominal charge; please let Tracey Andrew at the Institute know by **22 September 2000** if you intend to come, to help us plan for lunch: tel: (01223) 335984; fax: (01223) 330508; e-mail: t.andrew@newton.cam.ac.uk. There are limited funds available to assist research students to attend: please apply by **22 September 2000** to Tracey Andrew at the Institute. Scientific enquiries may be addressed to Dr Renzo L. Ricca, Isaac Newton Institute, 20 Clarkson Road, Cambridge CB3 0EH (e-mail: r.ricca@newton.cam.ac.uk).

MATHSCI DISC AT UCL LIBRARY

LMS members are entitled to access MathSci on CD back to 1980 at UCL library. Unfortunately the library computers are in constant use and it has been necessary to set up a procedure for prebooking terminals with UCL library.

- 1. LMS members will need a **current library membership**. To obtain a library card please write to the Admissions Officer at UCL library asking for an LMS library card and enclosing a passport-size photograph of yourself.
- Send an e-mail to lmsinf@ucl.ac.uk specifying a preferred date and time and giving FIVE WORKING DAYS' notice.
- 3. A member of the library staff will endeavour to book a PC for an hour in a Science Library cluster room. If a terminal is not available in that location the library staff may have to book one elsewhere on the campus. A PC cannot be guaranteed during term-time, but 5 days notice gives a reasonable chance. The LMS member will be e-mailed by a member of the library staff either confirming the requested date and time (or a close match to the requested time) or asking for alternative suggestions.
- 4. At the appointed date and time the member goes to the Enquiry Desk in the DMS Watson Science Library at UCL, with their library card, where further details will await them. The member will be given directions to the reserved workstation, a username, password, and instructions for logging in to the service.

The Council of the LMS and the Librarian are working towards a simpler mechanism for accessing MathSci at UCL, but they accept that this arrangement is the best that can be offered at the moment.

HOLGATE LECTURES

All members are reminded of the Holgate lecture scheme which is designed to enable popular lectures to be staged in centres other than those covered by the main LMS Popular Lectures. In this WMY2000, please encourage local mathematical organisations (e.g. mathematics departments of schools, colleges, etc, masterclass groups, mathematics advisors, ...) to look at the LMS web pages (http://www.lms.ac.uk/activities/educa tion com/holgate general.html) where the latest list of Holgate Lecturers and the titles of their talks can be found. (This could be especially important in more rural areas where mathematical activities may be generally few and far between.) Remember it is WMY2000!

If further information is needed contact: Timothy Porter, Mathematics Division, School of Informatics, University of Wales, Bangor, Dean Street, Bangor, Gwynedd LL57 1UT (tel: 01248 382492, e-mail: t.porter@bangor.ac.uk).

AUBREY W. INGLETON

Dr Aubrey W. Ingleton, who was elected a member of the London Mathematical Society on 15 December 1949, served on Council 1967-77, *Proceedings* Editor 1968-74, died on 28 June 2000, aged 79.

FRANK M. LESLIE, FRS, FRSE

Professor Frank M. Leslie, FRS, FRSE, who was elected a member of the London Mathematical Society on 15 January 1988, died on 15 June 2000, aged 65.

ARTHUR H. STONE

Professor Arthur H. Stone, who was elected a member of the London Mathematical Society on 16 December 1948, died on 6 August 2000, aged 83.

ACADÉMIE DES SCIENCES

Professor J.M. Ball, FRS, has been elected a Foreign Member of the Académie des Sciences.

WAVE MOTION

LMS/EPSRC Short Course

Birmingham, 8 - 12 January 2001

Organisers: J. Billingham, A.C. King

Wave phenomena occur in many important physical and chemical systems. We shall begin by describing the simplifications available for small-amplitude linear water waves, and how dispersion affects their propagation. We shall also study linear shallow water waves, and, in the final part of the course, consider how basic linear shallow water waves are modified by the introduction of weak non-linearity. This leads to the Kortweg-de Vries equation, which we shall learn how to solve using the inverse scattering transform, introducing the concept of a soliton solution along the way.

The remainder of the course is concerned with nonlinear gas dynamics, waves of chemical reaction and diffraction. We shall study nonlinear gas dynamics as an example of a system in which wave steepening causes shock waves to form. In contrast, chemical waves form through a balance between chemical reaction and molecular diffusion. In studying diffraction, we shall see how the Wiener-Hopf technique can be used to analyse how light and sound interact with sharp edges. We conclude the course by studying nonlinear water waves, concentrating on some simple instability mechanisms.

The meeting is aimed at research students working in the areas of continuum mechanics and/or mathematical modelling.

- Introduction to Linear Waves Professor Jean-Marc Vanden-Broeck (East Anglia)
- Refraction and Diffraction Professor Andrew King (Birmingham)
- Introduction to Nonlinear Waves Professor David Needham (Reading)
- Solitons and the Inverse Scattering Transform Dr John Billingham (Birmingham)
- Nonlinear Water Waves Dr Stephen Decent (Birmingham)

The registration fee is £70. Participants will receive a free copy of a key textbook in this area. UK-based research students can expect to receive an EPSRC grant to cover the cost of course accommodation and meals. Participants must pay their own travel costs. EPSRC-supported students can expect that their registration fees and travel costs will be met from the EPSRC Research Training and Support Grant that is paid to universities with each studentship award.

Application forms may be obtained from: Helen Woodward, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HS (e-mail: woodward@lms.ac.uk) or from the LMS website (http://www.lms.ac.uk/activities/reasearch meet_com/short_course/06.app.html).

Numbers will be limited and those interested are advised to make an early application. The closing date for applications will be **27 October 2000**.

SCOTTISH COMPUTATIONAL MATHEMATICS SYMPOSIUM 2000

This is the ninth annual Scottish Computational Mathematics Symposium organised by D.B. Duncan (Heriot-Watt University) and D.M. Sloan (University of Strathclyde) with the aim of bringing together mathematicians and others who develop and/or use computer algorithms to solve mathematical problems. The meeting is being held at the University of Strathclyde, Glasgow from 9.30 am - 5.00 pm on Friday 22 September 2000. The meeting is supported by the London Mathematical Society. The speakers are:

- Professor Roger Fletcher (University of Dundee) Nonlinear programming and free boundary problems
- Professor Ben Leimkuhler (University of Leicester) Geometric integrators and molecular dynamics applications
- Dr Gabriel Lord (Heriot-Watt University) Computation of connections to periodics
- Professor Sean McKee (University of Strathclyde) The numerical solution of free surface flows
- Professor Ian Sloan (University of New South Wales) *Solving parabolic problems* without time-stepping
- Professor Endre Süli (University of Oxford) Discontinuous hp-finite element methods for advection-diffusion problems (Joint with Christoph Schwab, ETH, Zürich and Paul Houston, University of Leicester).

The registration fees is £20 (£15 for students) and covers tea/coffee/buffet lunch. To register, send a cheque payable to University of Strathclyde by 8 September, and include your address. Cheques should be sent to: Professor D. Sloan, Department of Mathematics, University of Strathclyde, 26 Richmond Street, Glasgow G1 1XH (d.sloan@strath.ac.uk).

BELFAST FUNCTIONAL ANALYSIS DAY 2000

This year's edition of the Belfast Functional Analysis Day (BFAD 2000) will feature Professor A.R. Villena Munoz (Univ Granada, Spain) as the main speaker. His title is "Automatic Continuity in Associative and Nonassociative Context". The one-day meeting, which is organised by Dr M. Mathieu and Professor A.W. Wickstead, is held at the Pure Mathematics Department of Queen's University Belfast on Saturday 18 November 2000. It is supported by the London Mathematical Society, in particular to assist graduate students to attend the meeting. The programme will consist of two main lectures and shorter, contributed talks. Further information is available on the web (http://www.qub. ac.uk/mp/pmt/mm&seminar/BFAD2000 ann1.htm) or by sending an e-mail (m.m@qub.ac.uk).

BOUNDARY INTEGRAL METHODS Theory and Applications

The 2nd international conference on Boundary Integral Methods: Theory and Applications will be held at the University of Bath from 12 - 16 September 2000. The conference is supported by an LMS conference grant. This will support the travel and subsistence expenses of two delegates from the former Soviet Union and will provide a number of LMS Bursaries towards travel and subsistence costs for UK Research Students. The fSU delegates are Professor E. Tyrtyshnikov of the Russian Academy of Sciences, Moscow and Professor V.M. Babich of the St Petersburg State University and the Steklov Mathematical Institute, St Petersburg.

Further information can be found on the web site: (http://www.maths.bath. ac.uk/~igg/lms.html). Bion Enquisi Wilfried Schmid Mathematics Unlimited – 2001 and Beyond

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http://www.springer.de/math/wmy2000/2000book/

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This is a book guaranteed to delight the reader. This veritable treasure trove not only depicts the state of mathematics at the end of the century, but is also full of remarkable insights into its future development as we enter a new millennium. True to its title, the book extends beyond the spectrum of mathematics, both pure and applied, to include contributions from other related sciences. Whatever your field of expertise, you will enjoy reading the many stimulating contributions and, in so doing, gain insights into the astounding progress of mathematics and the perspectives for its future over the next 100 years.

Unique in both form and content, this is a "must-read" for every mathematician and scientist and, in particular, for graduates still choosing their specialty.





UNIVERSITY OF DUBLIN

TRINITY COLLEGE

Department of Pure and Applied Mathematics

Trinity College Dublin, founded in 1592, has a long tradition in the study of mathematics and its Department of Pure and Applied Mathematics currently has two full-time Chairs, the earlier of which dates from 1762. Following the retirement of the previous incumbent, the College is now seeking outstanding candidates, with an international reputation of achievement, for the

University Chair of Natural Philosophy (1847)

Candidates should have a distinguished record of achievement in research in any area of applied mathematics or theoretical physics, and a strong commitment to teaching. The person appointed will serve as Head of Department in accordance with College regulations concerning headship.

The appointment, which will be tenable from 1 June 2001 (or as soon as possible thereafter), will be made at the appropriate point on the professional salary scale, which for new entrants is currently IR£50,374-IR£65,091 (€63,962 - €82,649).

Information about the Department and further particulars of the appointment, including details of salary and other benefits may be obtained from

Michael Gleeson, Secretary to the College Trinity College Dublin 2

Telephone: +353 1 608 2197/1123 Fax: +353 1 671 0037 e-mail: moya.thompson@tcd.ie

To whom formal application may be sent to arrive by the preferred closing date of **29th September 2000.**

Further details regarding the Department may be obtained on the website: http://www.maths.tcd.ie

VISIT OF PROFESSOR D. JUNGNICKEL

Dieter Jungnickel, Professor of Discrete Mathematics, Optimisation and Operations Research at Augsburg, will be visiting the UK during September and October, supported by an LMS scheme 2 grant. He will give talks whilst visiting the following institutions:

- 17-24 September, University of Wales Aberystwyth (contact: Vassili Mavron, vcm@aber.ac.uk) 'Sequences with good correlation properties'
- 25 September 3 October, Queen Mary and Westfield College, (contact: Simeon Ball, s.ball@qmw.ac.uk). Title

of talk to be announced.

- September 27, University of Sussex (contact: James Hirschfeld, jwph@ sussex.ac.uk) 'Sequences with good correlation properties'
- 28 September, Royal Holloway (contact: Peter Wild, p.wild@rhbnc.ac.uk) 'Perfect codes and balanced generalised weighing matrices'

For further information contact Dr Vassili Mavron, Department of Mathematics, University of Wales Aberystwyth (e-mail: vcm@aber.ac.uk, tel: 01970 622766, fax: 01970 622777).

LMS PROGRAMME AND CONFERENCE FUND

Programme Committee has recently awarded grants to support the following conferences and meetings. These are open to members. If you wish to attend, or would like more information, please contact the organiser.

Date/Venue 7-9 Sept 2000 East Anglia	Title British Logic Colloquium	Organizer/e-mail M. Dzamonja h020@uea.ac.uk D. Evans d.evans@uea.ac.uk	
11-17 Sept 2000	Workshop on Orbifolds,	T. Porter	
Bangor	Groupoids and their Applications	t.porter@bangor.ac.uk	
11-15 Sept 2000	Mathematics in Medicine	J. King	
Nottingham	Study Group	john.king@nottingham.ac.uk	
22 Sept 2000	Scottish Computational	D. Sloan	
Strathclyde	Mathematics Symposium 2000	d.sloan@strath.ac.uk	
18 Nov 2000	Belfast Functional Analysis	M. Mathieu	
QUB	Day 2000	m.m@qub.ac.uk	
8-13 July 2001	ICMS Workshop on Algebraic	P. Rowlinson	
ICMS	Graph Theory	p.rowlinson@stirling.ac.uk	
9-13 July 2001	27th Conference on Stochastic	J.R. Norris	
Cambridge	Processes and their Applications	j.r.norris@statslab.cam.ac.uk	
16-20 July 2001 Huddersfield	Algorithms for Approximation 4	J.C. Mason j.c.mason@hud.ac.uk	
5-18 Aug 2001 Oxford	Groups St Andrews 2001	C.M. Campbell gps2001@mcs.st-and.ac.uk	

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

BRIMS DAY: Differential Geometry in Fluid Dynamics and Dynamical Systems

20 November 2000 Organiser: Professor Tsutomu Kambe (Tokyo)

Speakers: Y. Brenier (Paris), Y. Fukumoto (Kyushu), D. Holm (Los Alamos), T. Kambe (Tokyo), B. Khesin (Toronto), G. Misiolek (Notre Dame), T. Ratiu (EPFL).

Programme theme: Dynamical systems with finite or infinite number of degrees of freedom, such as hydrodynamics, magnetohydrodynamics, and various integrable systems, often have certain symmetry groups. Recent advances in the description of behaviour of those systems are related to the study of differential geometry of the corresponding groups. The geometric theory allows one to describe both quantitative and qualitative global properties of trajectories of such systems.

For instance, the time evolution of a flow of an ideal incompressible fluid is governed by the geodesic equation on the group of volume-preserving diffeomorphisms. Kinetic energy defines the corresponding right-invariant metric on that group. Thus group theory and differential geometry provide a natural framework for the description of fluid motions. This approach, originally suggested by V. Arnold in 1966 for an ideal fluid, its later extensions to various media, magnetohydrodynamics, and integrable systems, as well as recent spectacular achievements in these areas, will be the subject of this workshop.

This scope of mathematical ideas gives a profound insight into the nature of various physical systems, both finite and infinite-dimensional, and opens new areas for study. Moreover, numerous applications to incompressible and compressible, homogeneous and stratified fluids, MHD fluid, rigid bodies, and many other dynamical systems has proved to be fruitful for the mathematical theories involved.

This meeting is being supported by Hewlett-Packard's Basic Research Institute in the Mathematical Sciences (BRIMS) and the Isaac Newton Institute.

Further information about BRIMS is available from the web (http://www-uk. hpl.hp.com/brims/home.html).

Further information about the meeting is available from the web (http://www.newton.cam.ac.uk/programs/gtfw03.html) where information about the main programme can be found. Lunch will be available for a nominal charge; please let Tracey Andrew at the Institute know by **31 October 2000** if you intend to come, to help plan for lunch (tel: (01223) 335984; fax: (01223) 330508; e-mail: t.andrew@newton.cam.ac.uk). There are limited funds available to assist research students to attend: please apply by **31 October 2000** to Tracey Andrew at the Institute. Scientific enquiries may be addressed to Professor Tsutomu Kambe (e-mail: kambe@phys.s.u-tokyo.ac.jp).

WORKSHOP ON ORBIFOLDS, GROUPOIDS, AND THEIR APPLICATIONS

There will be an informal open workshop at the University of Wales Bangor from 11 - 17 September 2000, on the interplay between orbifolds and groupoids, together with the application of orbifold methods to problems in crystallography, geometric group theory and equivariant algebraic topology. The aim of the workshop is to provide a venue for the exchange of information on different aspects of the area and to encourage collaboration across the different subject specialisms that are involved. Some time will be set aside for examination of the problems where existing techniques seem not to be adequate. The workshop is in part to celebrate the work on groupoids, their theory and applications, by Ronnie Brown who has recently retired from a full-time professorship at Bangor. It will also form part of his (belated) 65th birthday celebrations!

The workshop will be informal. Although there will be some survey talks, the main work will be concentrated on the future in 'discussion mode' rather than lecture. It is hoped that questions such as the interpretation of homotopy theoretic information on an orbifold, the applicability of current algebraic - topological techniques to problems in 'crystallographic topology' and the link between orbifolds and sheaf theory will be addressed. The background of the participants is from various subject areas (crystallography, geometric group theory, category theory, etc.) and one task is to find a common language where everyone has a moderate chance of understanding and communicating their questions. There may be some need for quick sketches of background assumptions, theory, etc., and, because of this, sessions are likely to be of variable length and the timetable will be (by necessity) flexible. There will be some space for a display of preprints/ offprints and 'posters'.

At present the list of speakers includes:

- R. Brown Groupoids and their applications
- A. Haefliger Geometric group theory, groupoids and geometry
- C. Johnson Crystallographic topology
- I. Moerdijk Category theory, orbifolds and toposes

Various UK researchers in differentiable groupoids, equivariant homotopy and its applications and related areas are also expected.

Accommodation is likely to be in the student village (en-suite facilities) at a short distance from the Mathematics building. A small registration fee of £20 is requested to cover the cost of a workshop dinner and daily coffee/tea, etc. The organisers are seeking some financial support from various organisations in order to give limited help to some participants (priority will be given to postgraduates). The London Mathematical Society are supporting the workshop. If you are interested in attending the workshop. contact T. Porter by e-mail (t.porter@ bangor.ac.uk) in the first instance. For further information visit the workshop home page (http://www.bangor.ac.uk/ ma/news/orbifold/announce.html).

ALGEBRA AND TOPOLOGY WEEK

An "Algebra and Topology Week" will be held at the University of Leicester from 18 - 22 September 2000. The aim of the week is to bring together algebraists and topologists from various places inside the UK and visitors from abroad. For details visit the web site (http://www.mcs.le. ac.uk/research/pure/Alg-Top.html) or contact Nicole Snashall (njs5@mcs.le.ac. uk). The first two days will be a Bristol, Leicester, Oxford Colloquium (BLOC). and the Wednesday will be a Transpennine Topology Triangle (TTT) meeting. Both BLOC and TTT are supported by LMS scheme 3 grants.

MathFIT 2000

Call for Proposals



Closing date: 20 October 2000

The Engineering and Physical Sciences Research Council invites applications for research grant and visiting fellowship proposals under the MathFIT (Mathematics for Information Technology) initiative. The initiative is jointly sponsored by the EPSRC and the London Mathematical Society and began in the summer of 1996, was subsequently expanded in spring 2000 and will run until 2003. A budget of £1.5 million has been ear-marked for this call and it is envisaged that there will be similar calls with similar budgets in 2001 and 2002.

Aims and Objectives

EPSRC

The basic aim of MathFIT is to develop new interactions between mathematics and computer science, where 'mathematics' and 'computer science' are to be interpreted broadly and to include, for example, statistics and operations research, and information technology and artificial intelligence, respectively. These interactions might take the form of:

- a dynamic exchange of ideas, relevant to research in mathematics, in computer science or at the interface;
- applications of mathematical research to research in computer science, or *vice versa*;
- new developments in either mathematics or computer science inspired and motivated by research activity in the other domain; or
- a transfer or training of people with research expertise in one domain to apply these skills to research in the other domain.

Applicants wishing to discuss their proposal prior to submission are welcome to telephone or e-mail the **MathFIT Co-ordinator** Professor Iain A. Stewart (tel: 0116 2523885; e-mail: i.a.stewart@mcs.le.ac.uk).

For further details on the MathFIT initiative, the call for proposals, and how to apply, please see: http://www.mcs.le.ac.uk/~istewart/MathFIT/MathFIT.html

THE FERRAN SUNYER I BALAGUER PRIZE

Each year in honour of the memory of Ferran Sunyer i Balaguer, the Institut d'Estudis Catalans awards an international mathematical research prize bearing his name. This prize was awarded for the first time in April 1993. The competition is open to all mathematicians, subject to the following conditions:

- The prize will be awarded for a mathematical monograph of an expository nature presenting the latest developments in an active area of research in Mathematics, in which the applicant has made important contributions.
- The monograph must be original, written in English, and of at least 150 pages. The monograph must not be subject to any previous copyright agreement. In exceptional cases, manuscripts in other languages may be considered.
- The prize, amounting to 10,000 euros, is provided by the Ferran Sunyer i Balaguer Foundation. The winning monograph will be published in Birkhäuser Verlag's series "Progress in Mathematics", subject to the usual regulations concerning copyright and author's rights.
- The submission of a monograph implies the acceptance of all of the above conditions.
- The name of the prize-winner will be announced in Barcelona in April 2001.

The winner of the prize will be proposed by a Scientific Committee consisting of: H. Bass (University of Michigan), P. Bayer (Universitat de Barcelona), A. Cordoba (Universidad Autónoma de Madrid), P. Malliavin (Université de Paris VI) and W. Weinstein (University of California at Berkeley).

Monographs should preferably be typeset in TEX. Authors should send a hard copy of the manuscript and two disks, one with the DVI file and one with the PS file (PostScript), and enclosing an accompanying letter to the Ferran Sunyer i Balaguer Foundation. Submissions should

be sent before 15 December 2000 to the following address: Centre de Recerca Matemàtica (IEC), Fundació Ferran Sunyer i Balaguer, Apartat 50, E-08913 Bellaterra, Spain (e-mail: crm@crm.es).

For further information on the Ferran Sunyer i Balaguer Foundation, visit the website (http://www.crm.es/info/ffsb. htm).

EDINBURGH MATHEMATICAL SOCIETY Meeetings 2000-2001

The following meetings are to be held by the Edinburgh Mathematical Society during the session 2000-01: 2000

- 20 Oct (Edinburgh, AGM) L.H. Kauffman
- 17 Nov (Strathclyde) D.F. Griffiths
- 15 Dec (Napier) W.A. Light
- 2001
- 12 Jan (Edinburgh) A.M. Etheridge
- 9 Feb (Edinburgh) S. Donkin
- 9 Mar (Aberdeen) H.R. Morton
- 4 May (Stirling) R. Hill
- 1 Jun (St Andrews) H. Brezis

For further information contact the Meetings Secretary, Philip Heywood, Department of Mathematics and Statistics, University of Edinburgh. Mayfield Road, Edinburgh EH9 3JZ (philip@maths.ed.ac.uk).

COMPUTABILITY AND COMPLEXITY IN ANALYSIS

A workshop on Computability and Complexity in Analysis will be held at University of Wales Swansea from 17-19 September 2000. The aim of the workshop is to bring together people interested in computability and complexity aspects of analysis and to explore connections with numerical methods, physics and, of course, computer science. Further information is available from the website (http://www.informatik.fernuni-hagen. de/cca/cca2000/).

TOPOLOGICAL METHODS IN THE PHYSICAL SCIENCES

A Discussion Meeting on Topological Methods in the Physical Sciences will be held on Wednesday 15 November and Thursday 16 November 2000, at The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG. This meeting will focus on four areas of mathematical physics in which topological ideas and methods find natural application: caustics in optics and quantum physics, fluid mechanisms and magnetohydrodynamics, quantum field theory models and the large-scale structure of the Universe. Posters are invited for this Discussion Meeting. A set of poster abstracts will be provided to all those attending but posters will not form part of the published proceedings. Contact Froniga (froniga.lambert@royalsoc. Lambert ac.uk) for an application form.

The speakers are:

- Professor Maxim Kontsevich
- Professor Alexandre Varchenko
- Sir Michael Atiyah FRS
- Professor Graeme Segal FRS
- Professor Ludvig Faddeev
- Dr Nikita Nekrasov
- Professor Boris Khesin
- Professor Phil Holmes
- Professor Mitchell Berger
- Professor Jerry Marsden
- Professor Gerard Misiolek
- Professor John Hannay
- Professor Robert MacKay
- Dr Victor Goryunov

For further information please e-mail your mailing details to discussion.meet ings@royalsoc.ac.uk. All interested in the subject are welcome at the meeting. Those wishing to attend should complete an application form together with the necessary remittance by 25 October 2000 to: Science Promotion Section, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG.

CLAUDE BERNARD LECTURE

Professor Pierre-Louis Lions (CNRS, Université Paris-Dauphine) will give The Royal Society Claude Bernard Lecture on Tuesday 3 October 2000 at 17.30. The lecture "Partial differential equations, models and simulations" will illustrate the connections between nonlinear partial differential equations modelling, the mathematical analysis of those models and numerical simulations, using an historical perspective and some modern industrial applications. Trends in modelling and analysis as used in the research process will be described.

The Claude Bernard Lecture is given annually by a senior French scientist as part of an exchange agreement with the Académie des Sciences of the Institut de France. All are welcome to attend. Tickets will not be issued and seats cannot be guaranteed. Parties of 6 or more are asked to inform the Society beforehand. For further information contact: Froniga Lambert (tel: 020 7451 2574, email: froniga.lambert@royalsoc.ac.uk).

> Interested in Secondary Mathematics Teaching as an alternative career?

3-session 'taster' course October/November 2000 including one day school observation fee £30.00

Details: D. Huit 020 7612 6589 e-mail: d.huit@ioe.ac.uk

Institute of Education University of London Hans Magnus Enzensberger, Drawbridge Up: Mathematics – A Cultural Anathema; Marko Petkovsek, Herbert Wilf, Doron Zeilberger, A = B; Jean-Pierre Serre, Abelian *F*adic Representations and Elliptic Curves; Mladen Victor Wickerhauser, Adapted Wavelet Analysis from Theory to Software; Louis Rowen, Algebra: Groups, Rings, and Fields; Ian Stewart, David Tall, Algebraic Number Theory and

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Fermat's Last Theorem; Frank Olver, Asymptotics and Special Functions; Richard Melrose, The Atiyah-Patodi-Singer Index Theorem; Jack Robertson, William Webb, Cake Cutting Algorithms: Be Fair if You Can; Frank Morgan, Calculus Lite; David Anick, Differential Algebras in Topology; Stephen B. Maurer, Anthony Ralston, Discrete Algorithmic Mathematics; Mario Peruggia, Discrete Iterated Function Systems; Ben Chow, Robert Gulliver, Silvio Levy, John Sullivan, eds, Elliptic and Parabolic Methods in Geometry:

a web

Erdös on Graphs: His Legacy Anatole Beck, Michael N.

Haim Judah, The Incom-

Fan Chung, Ron Graham, of Unsolved Problems; Bleicher, Donald W. Crowe, Ex-

cursions Into Mathematics; Elwyn Berlekamp, The Dots-and-Boxes Game: Sophisticated Child's Play; David Eisenbud, Craid Huneke, eds, Free Resolutions in Commutative Algebra and Algebraic Geometry; Andrew Gleason, Fundamentals of Abstract Analysis; Martin Gardner, A Gardner's Workout: Training the Mind and Entertaining the Spirit; Barrett O'Neill, The Geometry of Kerr Black Holes; Daniel Zwillinger, Handbook of Integration; Cameron Browne, Hex Strategy: Making the Right Connections; Norbert Henze, Hans Riedwyl, How to Win More: Strategies for Increasing a Lottery Win: Martin Goldstern

books Win; Martin Goldstern, pleteness Phenomenon; Pavel Pudlak, eds, Logic

Sam Buss, Petr Hajek, Pavel Pudlak, eds, Logic Colloquium '98; Elwyn Berlekamp, David Wolfe, Mathematical Go: Chilling Gets the Last Point; Elwyn Berlekamp, Tom Rodgers, eds, The Mathemagician and Pied Puzzler; S. C. Coutinho, The Mathematics of Ciphers: Number Theory and RSA Cryptography; Joel Robbin, Matrix Algebra Using MINImal MATIab; Hartmut Bossel, Modeling and Simulation; Michael Monastyrsky, Modern Mathematics in the Light of the Fields Medals; Wolfgang Boehm, Hartmut Prautzsch, Numerical Methods; Helmuth Späth, One Dimensional Spline Interpolation Algorithms; Helmuth Späth, Two Dimensional Spline Interpolation Algorithms; Richard Herman,

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ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS (January to June 2001)

Organisers: H. Brezis (Paris), E.N. Dancer (Sydney), J.F. Toland (Bath), N.S. Trudinger (Australian National University).

Programme theme: This programme will emphasise selected recent developments in nonlinear elliptic and parabolic partial differential equations, together with geometric and scientific applications. It will be divided into four inter-related themes:

- 1. Reaction diffusion equations Particular attention here will be given to transition layers and their applications.
- 2. Fully nonlinear equations This area has developed substantially over the last two decades. Emphasis will be on Monge-Ampère equations and viscosity solutions.
- 3. Variational problems with singularities This theme will focus on mathematical models arising from material science, particularly from superconductivity and liquid crystals.
- 4. Geometric evolution equations The mathematical study of flows determined by geometric quantities has blossomed in recent years, with striking applications to areas such as image processing and relativity.

Workshops:

- 26 30 March Geometric Evolution
- 2 6 April Fully Nonlinear PDE
- 9 11 April Multiscale Methods in Nonlinear PDEs
- 25 29 June Singular Variational Problems
- 2 6 July Reaction Diffusion Equations

Participation: If you are interested in possible participation in this six-month research programme, please contact Professor J.F. Toland, School of Mathematical Sciences, University of Bath (jft@maths.bath.ac.uk), specifying which part of the programme you are interested in, funding needs and/or sources of financial support and supply a brief *curriculum vitae*.

The list of invited participants (*updated July 2000*) so far includes: B.H. Andrews (Canberra), J.M. Ball (Oxford), H. Berestycki (Paris), F. Bethuel (Paris), Y. Brenier (Paris), H. Brezis (Paris), X. Cabne (Barcelona), L. Caffarelli (Texas), H.D. Cao (Texas A&M), U. Cegnel (Umea) K.C. Chang (Beijing), K.S. Chou (Chinese University, Hong Kong), E.N. Dancer (Sydney), K. Ecker (Monash), L.C. Evans (Berkeley), G. Friesecke (Oxford), V.A. Galaktionov (Bath), Y. Giga (Hokkaido), M. Grinfeld (Strathclyde), P.F. Guan (McMaster), C. Gui (McMaster), G. Huisken (Tubingen), T. Ilmanen (ETH-Zurich), H. Ishii (Tokyo Metropolitan), N. Ivochkina (St Petersburg), Y.Y. Li (Rutgers), M. Mimura (Hirishima), W-M. Ni (Minnesota), P. Sternberg (Indiana), J.F. Toland (Bath), N.S. Trudinger (Canberra), J.I.E. Urbas (Canberra), J-L. Velasquez (Madrid), X-J. Wang (Canberra), J. We (Chinese University, Hong Kong), B. White (Stanford).

Further information is available from the web (http://www.newton.cam.ac.uk /npd.html). To join the programme e-mail list, please send the message<subscribe npd-list> to majordomo@ newton.cam.ac.uk.

OUP & AMS

Mathematics Frontiers and Perspectives Edited by Vladimir Arnold, Michael Atiyah, Peter Lax, and Barry Mazur



This remarkable book is a celebration of the state of mathematics at the end of the millennium. It consists of 28 articles written by some of the most influential mathematicians of our time. The articles offer valuable reflections about the amazing mathematical progress we have witnessed in this century and insightful speculations about the possible development of mathematics over the next century.

0-8218-2070-2, Hardback, £34.00 2000, 433 pages, American Mathematical Society

Analytic K-Homology Nigel Higson and John Roe

This book acquaints the reader with the essential ideas of analytic K-homology and develops some of its applications. It includes a detailed introduction to the necessary functional analysis, followed by an exploration of the connections between K-homology and operator theory, coarse geometry, index theory, and assembly maps, including a detailed treatment of the Atiyah-Singer Index Theorem.

Oxford Mathematical Monographs 0-19-851176-0, Hardback, £65.00 October 2000, 320 pages

Hyperbolic Partial Differential Equations and Wave Phenomena Mitsuru Ikawa



Hyperbolic Partial Differential Equations and Wave Phenomena ^{Misseethees}

MATHEMATICAL MONOGRAPH

The familiar wave equation is the most fundamental hyperbolic partial differential equation. Other hyperbolic equations, both linear and nonlinear, exhibit many wave-like phenomena. The primary theme of this book is the mathematical investigation of such wave phenomena.

Translations of Mathematical Monographs 0-8218-1021-9, Paperback, £22.50 2000, 194 pages, American Mathematical Society

Classical and Modern Methods in Summability Johann Boos

Aims to introduce the reader to the wide field of summability and its applications, and provide an overview of the most important classical and modern methods used.

Oxford Mathematical Monographs 0-19-850165-X, Hardback, £75.00 November 2000, 592 pages, 14 line figures

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FORTHCOMING CONFERENCES

Ninth Mathematics of Surfaces Cambridge, UK 4 - 6 September 2000

Third Quantitative Modelling in the Management of Health Care University of Salford, 5 - 7 September 2000

Second International Boundary Integral Methods: Theory and Applications University of Bath, 12 - 16 September 2000

An Interdisciplinary Workshop on Innovative Boundary Element Techniques in Computational Acoustics and Electromagnetics University of Bath, 14 - 15 September 2000

Short Course and Third Imaging and Digital Image Processing: Mathematical Methods, Algorithms and Applications De Montfort University, Leicester, 12-15 September 2000

Short Course and First Fractal Geometry: Mathematical Techniques, Algorithms and Applications De Montfort University, Leicester, 19-22 September 2000

Assessing Credit Risk in Retail Financial Services Bank of England, 14 November 2000

Fifth Mathematics in Signal Processing University of Warwick, 18 - 20 December 2000

Third Spatial Patterns in Permeable Rocks *Churchill College, Cambridge, 27 - 29 March 2001*

Fourth Modelling in Industrial Maintenance and Reliability University of Salford, 9-11 April 2001

ECCOMAS 2001 Swansea, 4 - 7 September 2001

Advanced Simulation and Control for Automotive Applications Keble College, Oxford, 24 - 26 September 2001

FURTHER DETAILS FROM:

Pamela Bye, Conference Officer, The Institute of Mathematics and its Applications, Catherine Richards House, 16 Nelson Street, Southend-on-Sea, Essex SS1 1EF.

Tel:	(01702) 354020	Fax:	(01702) 354111
E-mail:	conferences@ima.org.uk	Web:	www.ima.org.uk



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DIARY

The diary lists Society meetings and other events publicized 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 in the Society's web site (http://www.lms.ac.uk/meetings/diary.html). SEPTEMBER 2000

1-4 Constantin Caratheodory Congress, Evros, Greece (279) 3-9 Operator Function Theory and Semigroups, Ambleside (281)

4-7 UMTC 2000, Sheffield Hallam University (282) 4-8 Partial Differential Equations, LMS/EPSRC Short Course, Bath University (283)

4-8 Mathematical Biology, LMS/EPSRC Short Course, Nottingham University (283)

4-8 Current Environmental Issues: Quantitative Methods Meeting, TIES/SPRUCE 2000, Sheffield University (280) 4-15 Spatial Structures in Biology Summer School, Italy (279) 4-15 Model - Theoretical Algebra and Algebraic Models of Computation ICMS Workshop, ICMS Edinburgh (284) 7-9 British Logic Colloquium 2000, East Anglia University

10-17 Geometry of Quiver-Representations and Preprojective Algebras Summer School, Isle of Thorns, Sussex University

11-16 Set Theory and Analysis, LMS/EPSRC Short Course, Leeds University (283)

11-17 Orbifolds, Groupoids and Their Applications Workshop, University of Wales Bangor (285)

12-16 Boundary Integral Methods Conference, Bath University (285)

13-15 Royal Statistical Society International Conference, Reading University (277)

15-18 Physical Interpretations of Relativity Theory Meeting, Imperial College London (277)

17-19 Computability and Complexity in Analysis Workshop, University of Wales Swansea (285)

18-19 Function Theory and Function Spaces Meeting, Nottingham University (283)

18-22 Algebra and Topology Week, Leicester University (285) 18-23 Differential Geometry International Congress, Bilbao, Spain (275)

19 Flexible Learning in Mathematics, Birmingham University (281)

22 Scottish Computational Mathematics Symposium 2000, Strathclyde University (285)

27 Set Theory and its Neighbours: Games, De Morgan House, London

OCTOBER 2000

3 Partial Differential Equations, Models and Simulations -P.-L. Lions (Claude Bernard Lecture) Royal Society London (285)

12 In Search of the Ideal Knot, Spitalfields Day, Isaac Newton Institute, Cambridge (284)

20 London Mathematical Society Meeting, London 20 Edinburgh Mathematical Society Meeting, Edinburgh University (285)

20-23 Singularities in Classical, Qantum and Magnetic Fluids Workshop, Warwick University (284)

NOVEMBER 2000

15-16 Topological Methods in the Physical Sciences

Discussion Meeting, Royal Society London (285)

17 Edinburgh Mathematical Society Meeting, Strathclyde University (285)

18 Belfast Functional Analysis Day 2000, Queen's University

Belfast (285)

18-22 Mathematics for Living Conference, Jordan (280) 20 Differential Geometry in Fluid Dynamics and Dynamical Systems, BRIMS Day, Isaac Newton Institute, Cambridge (282) (285)

24 London Mathematical Society Meeting and AGM, London **DECEMBER 2000**

15 Edinburgh Mathematical Society Meeting, Napier University (285)

16-21 Applications of Singularity Theory to Geometry Conference, Liverpool University (283)

18-20 Mathematics in Signal Processing, Warwick University (279)

JANUARY 2001

8-12 Wave Motion LMS/EPSRC Short Course, Birmingham University (285)

8-18 Nonlinear Partial Differential Equations ICMS Instructional Conference, ICMS Edinburgh (284)

12 Edinburgh Mathematical Society Meeting, Edinburgh

University (285) FEBRUARY 2001

9 Edinburgh Mathematical Society Meeting, Edinburgh University (285)

28 Inaugural LMS Regional Meeting (Midlands), Birmingham 10 Mary Cartwright Lecture, LMS Meeting, Oxford **MARCH 2001**

9 Edinburgh Mathematical Society Meeting, Aberdeen University (285)

APRIL 2001

2-5 British Applied Mathematics Colloquium, Reading University

9-12 British Mathematical Colloquium, Glasgow University MAY 2001

4 Edinburgh Mathematical Society Meeting, Stirling University (285)

6-13 Symmetry and Perturbation Theory Workshop (SPT2001), Sardinia (284)

28 -1 June Harmonic Morphisms and Harmonic Maps Conference, CIRM, Luminy, France (284)

IUNE 2001

1 Edinburgh Mathematical Society Meeting, St Andrews University (285)

8-10 Belgian Mathematical Society/Deutsche Mathematiker Vereinigung joint meeting, Liège University, Belgium (284) 19-22 Computational Intelligence: Methods and Applications Congress (CIMA 2001) University of Wales, Bangor (283) JULY 2001

1-6 British Combinatorial Conference, Sussex University (276) 9-13 Stochastic Processes and their Applications Conference, Cambridge (275)

29-2 Aug Teaching of Mathematical Modelling and Applications (ICTMA 10), Tsinghua University, China (284) AUGUST 2001

12-19 Homological Conjectures for Finite-Dimensional Algebras Summer School, Nordfjordeid, Norway (275) APRIL 2002

7-12 Joint BMC/BAMC, Warwick University

AUGUST 2002

20-28 ICM2002, Beijing, China (272)

The Newsletter is published monthly except in August. Items and advertisements for inclusion in the Newsletter should be sent to the Editor, Susan Oakes, by e-mail, fax or post to the LMS office (addresses below), to arrive before the first day of the month prior to publication.

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