## THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 241

### September 1996

FORTHCOMING SOCIETY MEETINGS Friday 18 October 1996, Linnean Society, London Cayley-Sylvester Centenary Meeting on Invariant Theory W.P. Barth, C. de Concini, R.E. Howe, F.C. Kirwan Friday 15 November 1996, Linnean Society, London Annual General Meeting E. Witten, N.J. Hitchin (Presidential Address) Friday-Saturday 21-22 February 1997 - Oxford Group Theory Friday-Saturday 23-24 May 1997 - Liverpool

### LMS COUNCIL DIARY

At the June meeting of Council there were two major discussions which related to money. As members will be aware from the annual accounts, the Society has significant reserves and the two items concerned the investment of these and how the Society should develop in the future. Neither of these is a particularly easy issue.

The Society has a client agreement with Credit Suisse Asset Management Limited to advise us on investment policy. This is approved by Council, whose members are the trustees, but as the Society is a charity there are guidelines given by the Charity Commissioners about the basis of investment decisions. The investments are held by the National Westminster Bank plc and this can lead to a delay because before any action can be taken the decisions have to be ratified (on behalf of Council) by the Treasurer who then has to inform NatWest. With the introduction of paperless trading on the stock market and with tighter settlement deadlines, there is a fear that this procedure will handicap the Society in its dealings. Council discussed

a proposal that the investments be registered in the name of Buckmore Nominees Limited, an associate company of Credit Suisse. There was some unhappiness at this proposal and the Treasurer was asked to obtain assurances from the company about safeguards for protection of the Society's interests and the liabilities of the various parties.

Later Council considered a paper by the Treasurer about the Society's reserves, because it is essential that a charity should have a policy to justify their existence. A non-controversial policy is to transfer funds into a Building and Development Reserve Fund. There are concerns about the long term and whether our own premises would be beneficial. This took us into a debate about how the LMS should develop and how much we see the Society becoming a leading publishing house. This is a difficult issue and one on which there were differing views, as might be expected. It was resolved that the Finance, Personnel and Office Management and the Publications Committees

should discuss the issue of the reserves and report back to a special meeting of Council in 1997.

I wouldn't wish members to think that is all we discussed but with limited space it is difficult to go through all issues, such as the increasing allocations to various programmes, which will be reported elsewhere. However, one last personal comment: the Annual Dinner will be held at the RAF club; this has a dress code so do not forget your tie.

Alan Camina

### DEPARTMENTAL NEWS

Heriot-Watt University The Senate meeting on 11 June 1996 approved the promotion of Andrew Lacey to Professor and Bryan Rynne to Reader.

Leeds University Five members of the School of Mathematics have recently been promoted. In the Department of Pure Mathematics, Barry Cooper is now a Professor and Dugald Macpherson a Reader. In the Department of Applied Mathematical Studies, Allan Fordy is a Professor, and Frank Nijhoff and Mike Wilson are Readers.

Manchester University N.J. Higham has been appointed Professor of Applied Mathematics as from 1 July 1996.

**Queen Mary & Westfield College** Dr Alison Etheridge has been appointed Reader in Probability and Statistics as from 1 October 1996.

### EDINBURGH MATHEMATICAL SOCIETY 1996-97 Meetings

Meetings to be held by the Edinburgh Mathematical Society are: 18 October (Edinburgh - Annual General Meeting) Professor Sir Michael Atiyah; 15 November (Strathclyde) Professor C.J. Budd; 6 December (Napier) Dr S.M. Rees; 17 January (Edinburgh) Professor A.C. Newell; 14 February (Edinburgh) Professor S.C. Power; 14 March (Stirling) Dr A.G. Thomason; 2 May (Aberdeen) Professor B.E. Johnson; 6 June (St Andrews) Professor T.J. Laffey. Further information is available from the Honorary Secretaries, Dr P. Heywood and Dr C.J. Smyth, Department of Mathematics and Statistics, University of Edinburgh, James Clerk Maxwell Building, Kings Buildings, Mayfield Road, Edinburgh EH9 3JZ (Edmathsoc@ed.ac.uk).

### NORTH BRITISH FUNCTIONAL ANALYSIS SEMINAR

A meeting of the North British Functional Analysis Seminar will be held at the University of Glasgow from 2.30 pm on Friday 1st November until noon on Saturday 2nd November 1996. The speakers will be Professor Alfons van Daele (K.U. Leuven) on Friday and Professor Robert Deville (Bordeaux) on Saturday. For further information contact Dr G. Blower (e-mail: G. Blower@lancaster.ac.uk).

### COLLINGWOOD MEMORIAL PRIZE

This prize was established by the London Mathematical Society in memory of Sir Edward Collingwood, and is awarded annually to a student of the University of Durham obtaining First Class Honours in mathematics and entering a course of postgraduate study. The 1996 prize is awarded to Mr D. Johns, University College who is intending to do research at the University of Durham.

### SAMUEL VERBLUNSKY

Professor Samuel Verblunsky, who was elected a member of the London Mathematical Society on 13 June 1929, died on 5 July 1996 at the age of 90.

### JOHN C. FERNAU

Mr John C. Fernau, who was elected a member of the London Mathematical Society on 20 June 1980, died on 16 June 1996.

### LONDON MATHEMATICAL SOCIETY

### CAYLEY-SYLVESTER CENTENARY MEETING ON INVARIANT THEORY

### Friday 18 October 1996

- 2.00-2.45 F.C. Kirwan (Oxford) Geometric invariant theory, and moduli spaces in algebraic geometry
- 2.55-3.40 W.P. Barth (Erlangen) On Cayley's explicit solution of Poncelet's porism
- 3.50-4.35 R.E. Howe (Yale) Reciprocity laws in invariant theory, and some contemporary applications of SL<sub>2</sub>
- 4.35-5.00 Tea
- 5.00-5.15 Society business
- 5.15-6.00 C. de Concini (Pisa) Invariant theory in arbitrary characteristic: an overview

### The meeting will be held at the Linnean Society, Burlington House, Piccadilly, London W1.

### LONDON MATHEMATICAL SOCIETY NOTICE OF GENERAL MEETING

There will be a General Meeting of the Society on Friday 18 October 1996 at 5.00 pm in the Linnean Society Lecture Room, Burlington House, London W1, to consider a proposal by the Council of the Society to delete the existing By-Laws II,1, II,3 and II,4 and to substitute those printed below.

The Council proposes to allow mathematicians under the age of twenty-eight years to be elected to 'Associate Membership' of the Society. This category of Membership is permitted by the Statutes, but has not been used in recent years. Associate Members would pay a reduced subscription, and the level proposed (in the new By-Law II,1) for the 1996-97 session (which runs from 1 November 1996 to 31 October 1997) is £5.00.

The following arrangements would apply to Associate Membership.

- Statute 5 requires that candidates for Associate Membership be proposed and recommended by not less than two Members.
- Statute 4 requires that each Associate Member must be under the age of twentyeight years and shall cease to be an Associate Member on the thirty-first day of October next following her or his twenty-eighth birthday. Accordingly, candidates for Associate Membership would be required to state their dates of birth at the time of application.
- Statute 4 also permits an Associate Member to become an Ordinary Member, without the need for a fresh application for election, by giving written notice to the Meetings and Membership Secretary at any time not later than the date on which (s)he shall cease to be an Associate Member.
- Ordinary Members of the Society who have not reached the age of twenty-eight years on 31 October 1996 would be permitted to transfer to Associate Membership for the 1996-97 session, without the need for a fresh application for election, on condition that they provide their dates of birth.
- Associate Members would have all the privileges of Ordinary Members.
- The annual subscription for Associate Members ordinarily resident outside the United Kingdom would be the same as for those ordinarily resident within the UK; the annual subscription for all Reciprocity Members, irrespective of age, will be one half of the Ordinary Members' subscription.

In addition, the Council has, in the light of Statute 11, increased the annual subscription of Ordinary Members for 1996-97 by 50 pence and increased the annual subscription of Corporation and Institutional Members for 1996-97 to £489 from the 1995-96 level of £470; Council has also increased the prices per volume of the **Bulletin**, the **Journal** and the **Proceedings** to individual members for 1996-97 by 75 pence. The new By-Laws II,1 and II,3 would record the new rates.

#### Text of the proposed By-Law II,1

The annual subscription to the Society of Ordinary Members for the 1996-97 session shall be £17.00. The annual subscription to the Society of Associate Members for the 1996-97 session shall be £5.00. The prices of the Society's periodicals to Ordinary, Associate and Reciprocity Members for the 1996-97 session shall be: **Proceedings** £16.75 per volume, **Journal** £16.75 per volume, **Bulletin** £16.75 per volume.

### Text of the proposed By-Law II,3

The annual subscription to the Society of Corporation and Institutional Members for the 1996-97 session shall be £489, inclusive of one volume of the **Bulletin** and two volumes of the **Journal** and of the **Proceedings**, except that those Corporation and Institutional Members who have more than one Representative shall pay an additional subscription of £17.00 for each Representative in excess of one.

#### Text of the proposed By-Law II,4

No entrance fee shall be payable by a newly-elected Member or by an Associate Member becoming an Ordinary Member.

R.Y. Sharp Council and General Secretary

### MATHEMATICS FOR IT (MATHFIT) Supported by EPSRC and the London Mathematical Society

Introduction As part of its continuing support for the health of both IT and Computer Science and Mathematics, the EPSRC wishes to foster and improve the links between these two disciplines through the Mathfit initiative. Mathfit is jointly sponsored by the EPSRC and the London Mathematical Society (LMS), and will run for 3 years. It will encourage the submission to EPSRC of proposals for cross-disciplinary research and Visiting Fellowships, and fund Summer Schools and workshops which address priority areas.

The Priorities Following consultations between the EPSRC, LMS and the research community, the following areas have been identified as priorities for future work. It should be noted that this list will evolve, and changes to the list may be made in future years.

•Algorithms and Structures: combinatorics, complexity theory, discrete mathematics.

•Artificial intelligence, including learning, neural computation, planning and reasoning: differential geometry and non-linear dynamics, logics, probabilistic and statistical techniques.

•Complex, communicating and concurrent systems: dynamical systems, ergodic theory, functional analysis, process calculi and logics, stochastic systems.

•Computer graphics, robotics and vision: algebraic, computational and differential geometry, kinematics, topology. •Principles of programming languages, including semantics and language design: category theory, game theory, logic, ordered structures and domain theory, universal algebra.

•Networks, telecommunications and information security: cryptology, data encoding, digitisation, graph theory, information theory, number theory, probabilistic and statistical techniques, signal processing.

#### Mechanisms

Workshops and Summer Schools - to be funded by EPSRC and the LMS. Proposals are invited for workshops and Summer Schools, particularly in those areas which are identified as priorities. Full details of how to apply are available on the world wide web (http://www.epsrc.ac.uk/progs/area/it

\_cs/mfitcall.htm) or from the contacts listed. Applications should be submitted by **1 October 1996** for events taking place in 1997.

*Research Proposals and Visiting Fellowships* - to be funded by EPSRC.

(i) Proposals for research are encouraged which address the topics listed in priorities, and will be considered as part of EPSRC's Responsive Mode. Proposals may be submitted at any time, and peer review will be carried out using the College of Referees and at least one referee nominated by the proposer. Applications should be made on form EPS(RP) and, in Section 4, should be marked "Maths/IT and Computer Science: Mathfit". Appraisals will be made against the normal criteria. Details of the application procedure can be found in EPSRC's 'Guide to Research Grants', which is available from EPSRC or (http://www. epsrc.ac.uk/progs/financial-admin/rgcont.htm). If the research assistant is named in the proposal, a CV of that person should also be included.

(ii) Visiting Fellowships (VF) proposals, particularly those which seek to transfer personnel between complementary Mathematics Departments and Computer Science Departments (or vice versa) are also welcomed. Applications should be made on form EPS(VF) and, in Section 4, should be marked "Maths/IT and Computer Science: Mathfit". Again, details of the application procedure can be found in EPSRC's 'Guide to Research Grants'. The VF proposals may be used to bring visitors from (complementary departments) abroad which will benefit the UK research in this area, but they may also be used to transfer personnel from complementary departments at other UK Higher Education Institutions. All proposals should include a CV for the nominated fellow(s).

**Contacts** Intending applicants are welcome to contact any of the contacts listed below before submitting any proposal.

**EPSRC** Mrs Anne Farrow, Programme Manager, Pure Mathematics, Mathematics Programme, EPSRC, Polaris House, North Star Avenue, Swindon SN2 1ET; tel: 01793-444110; fax: 01793-444007; e-mail: anne.farrow@epsrc.ac.uk or Dr Dominic Semple, Programme Manager, Systems Engineering, IT and Computer Science Programme, EPSRC, Polaris House, North Star Avenue, Swindon SN2 1ET; tel: 01793-444318; fax: 01793-444006; e-mail:dominic.semple@epsrc.ac.uk.

LMS Professor Ursula Martin, Chair, LMS Computer Science Committee, Computer Science Department, University of St. Andrews, St Andrews, Fife KY16 9SS; tel: 01334-463252; fax: 01334-463278; e-mail: um@dcs.st- and.ac.uk.

### WORKSHOP ON OSCILLATORY INTEGRALS AND CURVATURE IN HARMONIC ANALYSIS

There will be a small workshop on Fourier Analysis with the above title at the ICMS headquarters in Edinburgh's New Town at 14 India Street from 15-18 November 1996. This will be an ICMS associated programme and will be partly supported by the EU Fourier Analysis HCM project and by the LMS. There will be limitations on numbers of people attending, so all prospective participants should contact the organiser, Tony Carbery, by email (carbery@maths.ed.ac.uk) as soon as possible. PhD students and recent doctorates are particularly encouraged to apply.

The main topic of the workshop will be Curvature-related Phenomena in Harmonic Analysis. This will include the areas of hyperbolic and dispersive partial differential equations, multidirectional phenomena, oscillatory integral operators and singular and maximal Radon transforms. Amongst those who have already signalled an intention to participate are: Beckner (Austin), Duoandikoetxea (Bilbo), Gillespie (Edinburgh), Katz (Edinburgh), Kenig (Chicago), Marletta (Edinburgh), Perez (Madrid), Ricci (Torino), Ruiz (Madrid), Soria (Madrid), Urbina (Caracas), Vargas (Madrid), Wright (New South Wales) and Ziesler (Dublin).

### MATHEMATICAL WHO'S WHERE - UNITED KINGDOM 1996 edition

This directory contains information about mathematicians and mathematics departments in universities in the UK. A copy is enclosed with this mailing of the Newsletter to each member with an address in the area covered by the directory. Copies are available for purchase at a price of £4.00 or US\$8.00 per copy inclusive of postage, from the Administrator, London Mathematical Society, Burlington House, Piccadilly, London W1V ONL. Cheques should be made payable to the 'London Mathematical Society'.

### LMS EDUCATION COMMITTEE Holgate Lectures for Schools and Colleges

The London Mathematical Society is extending its provision of lectures at a popular level. In addition to the wellknown LMS Popular Lectures, held each year in London and two regional centres, it is planned to provide help for locally based groups to invite high quality lecturers to give a talk on a mathematical subject, at a level suitable for those in the 15 to 18 age group who may be considering mathematics for future study. The lectures (to be called Holgate Lectures in memory of Philip Holgate, who helped ensure the success of the Popular Lecture series) will be designed with the aim of enhancing the students' interest and awareness of mathematics and of encouraging them to appreciate the importance, excitement and beauty of mathematics.

The local group may typically be an *ad* hoc group of schools or colleges working together, but could equally well involve a local branch of an organisation such as the Mathematical Association or the Association of Teachers of Mathematics, or a local group that already organises masterclasses or mathematics fairs and that wishes to provide an activity for the older age group. To guarantee that an event is a success, the local organisers should ensure an audience of at least 50 and, as the aim of the scheme is to popularise mathematics within the 15 to 18 age group, the majority of those present should be in that age range.

The Education Committee of the London Mathematical Society will provide a list of three named speakers, with their contact addresses and the titles of the talks they are willing to give, together with a brief description or summary of what the session would be about. The local organisers would have total responsibility for the local arrangements such as venue, accommodation for the speaker, dates, times, etc, and for making contact with the chosen speaker. The lecturers will not charge fees for the lectures themselves, an honorarium being provided to them by the London Mathematical Society; but the Education Committee does ask local organisers to reimburse lecturers' travel expenses and subsistence costs and to cover local costs.

In the first instance, the prospective local organiser should contact the Administrator of the Society (Miss S.M. Oakes) for the list of this year's lecturers. If the local organisers have access to the Internet then they may obtain a copy of these details by consulting the homepage of the Society(http://www.qmw.ac.uk/~lms/ lms.html) following the pointers to the Education Committee's activity page.

The prospective local organiser should note that lecturers concerned have been told to accept at most 5 invitations during the academic year. It is also requested that the distance to be travelled by the lecturer be taken into account when choosing a lecturer (so if you are in Plymouth, please do not ask for a lecturer based in Aberdeen!).

**Grants** You may also like to note that the London Mathematical Society Education Committee gives small grants for activities, such as popular lectures, exhibitions, masterclasses, mathematical competitions, that help to encourage joint ventures between higher education institutions and schools, or the development of projects that would improve the 'Public Image of Mathematics'. To make the job of the Committee as simple as possible, any application for support should contain a brief description of the proposed event or project, with an outline of expected expenses, and details of other sources of support. The Committee meets in September, January and April, so please apply a good time before the event. Requests should be sent to: Dr S. Huggett, School of Mathematics, University of Plymouth, Drake Circus, Plymouth PL4 8AA.

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### 2nd EUROPEAN CONGRESS OF MATHEMATICS

The János Bolyai Mathematical Society organised ECM2 on behalf of the Mathematical Society in European Budapest between 22nd and 26th July 1996. Something like 750 mathematicians from across Europe attended, including a large number from CIS; this was a lot less than had been anticipated originally, but it did not avoid queues of 60-75 minutes to register! The number of participants from UK was lower than might have been expected, possibly because advance information on the planned mathematical programme had been extremely minimal; there was only one UK-based speaker, significantly fewer than might reasonably have been expected. The three-volume Congress Proceedings will be published in autumn 1997 by Birkhäuser-Verlag in its series "Progress in Mathematics", at an estimated cost of 328 Swiss Francs; though whether many UK individuals or libraries will find this price attractive is uncertain.

The LMS had a stall in the Publishers' Exhibition. This had many visitors from the UK, Europe and America, and helped to raise the Society's visibility as a lively mathematical society as well as an increasingly important mathematics publisher. The LMS also held a very successful and sociable Society Reception for members and for guests such as the European Mathematical Society Executive Committee. A number of members were also able to sign the Membership Book at the associated formal Society Meeting - at which the speeches were mercifully succinct and to the point!

ECM2 participants were given a public transport run-about ticket that enabled them to see a lot of Budapest. Unsurprisingly, most non-Hungarians were total non-starters at either pronouncing Hungarian from their phrase-books (even the usual courtesy phrases) or remembering phrases once taught them by locals! Compared with UK, the prices of restaurant and cafe meals were astonishingly reasonable, and the meals excellent; in the evening these were often accompanied by exciting Hungarian Gypsy music and dancers. The Congress Banquet was held in the Hungarian National Gallery, in the former Royal Palace; to the organisers' surprise, participants seemed to prefer talking to each other rather than listening to baroque chamber music by Monteverdi, Hotteterre, Telemann and Eszterhazy Pal.

ECM3 will be held in Barcelona in the year 2000, following a vote at the EMS Council Meeting in Budapest just prior to ECM2.

**Plenary lectures** These 50-minute talks were given in the Budapest Convention Centre:

N. Alon "Randomness and pseudo-randomness in discrete mathematics"

G. Ben Arous "Large deviations as a common probabilistic tool for some problems of analysis, geometry and physics"

D. McDuff "Recent progress in symplectic topology"

B. Dubrovin "Reflection groups, quantum cohomologies, and Painlevé's equations"

J. Kollár "Low degree polynomial equations: arithmetic, geometry and topology" J. Laskar "The stability of the solar system"

A. S. Merkurjev "K-theory and algebraic groups"

V. Milman "Surprising geometric phenomena of high-dimensional convexity theory"

St. Müller "Microstructures, geometry and the calculus of variations"

J.-P. Serre "Correspondences and dictionaries in geometry and number theory" **Parallel lectures** These were 45-minutes long, and were delivered by L. Ambrosia, K. Astala, R. Benedetti, Ch. Bessenrodt, F. Bethuel, P. 'Bjorstad, E. Bolthausen, J. Bricmont, L. Caporaso, J. de Jong, U. Dierkes, I. Dynnikov, H. Eliasson, H. Hedenmalm, E. Hrushovski, J. Kaczorowski, C. Lescop, R. März, J. Matousek, L. Merel, T. Nowicki, A. Pastur, R. Pérez-Marco, V.P. Platonov, J. Poeschel, L. Pyber, H.P. Schlickewei, E. Scopolla, A.N. Shiryaev, N. Simányi, J.Ph. Solovej, A. Stipsicz, G. Tardos, J.-P. Tignol, A. Veselov and E. Zuazua.

**Round tables** These are a distinctive feature of ECMs, consisting of a panel that give short talks followed by questions and comments from the participants at large. The topics were: "Electronic literature in mathematics", "Mathematical games", "Demography of mathematicians", "Women and mathematics", "Public image of mathematics", "Mathematics and Eastern Europe" and "Education".

Mathematical films A wide selection of mathematical films were shown, including "Fermat's Last Theorem" (50 minutes), "Escher: Géométrie des Mondes Impossibles" (28 minutes), "Croissance des Plantes" (14 minutes), "Das Spernersche-Lemma" (18 minutes), Metamorphoses: Nothing but Zooms" (5 minutes). "Minimal Surfaces" (8 minutes), "Mit I Matematiken" (26 minutes), "Not Knot" (13 minutes), "Study of a Numerically Modelled Severe Storm" (7 minutes). (Sadly, receipt of a compilation of lovely Open University films on affine, projective and other geometries was not even acknowledged.)

The really outstanding film was "N is a Number: A Portrait of Paul Erdös", an award-winning documentary by G.P. Csicsery. This featured Erdös's life story, his approach to mathematics, his wry humour, and his enormous influence on mathematicians world-wide. (The writer's Erdös number is 2, by the way.) It would be wonderful if the LMS or the BMC organised to screen the film soon in UK; as the Michelin Guide says of restaurants, "worth making a long journey for" !

And finally ...

We congratulate the European Mathematical Society Prizewinners at ECM2:

Alexis Bonnet for his work on a broad spectrum of problems in Applied Analysis including the Mumford-Shah conjecture in the theory of computer vision.

*Timothy Gowers* (Cambridge) for his work on the geometry of Banach spaces including the notorious Banach hyperplane problem.

Annette Huber for her work in the theory of the derived category of mixed motivic realizations including an absolute cohomology theory over which the usual absolute theories naturally factorise.

Aise Johan de Jong for a large variety of deep results on various aspects of arithmetic algebraic geometry, including the resolution of a conjecture of Veys and the answer to a long-standing question of Mumford on moduli spaces.

**Dmitri Kramkov** for his work in statistics and the mathematics of finance, including the structure of Le Cam's distance between two filtered statistical experiments and explicit solutions for Asian options.

*Jiri Matousek* for his work with a combinatorial and geometrical flavour in computational geometry, linear programming algorithms, geometric discrepancy theory, Banach spaces and mathematical logic.

Loic Merel for his work on an absolute bound for the torsion of elliptic curves, giving a solution to a problem open for over 30 years in spite of the attention of the experts in elliptic curves.

*Grigory Perelman* for his work in the development of the theory of Alexandrov spaces of curvature bounded from below, giving new insight into Riemannian geometry. (He declined the award of the Prize, however.)

*Ricardo Perez-Marco* for his work in the theory of dynamics of non-linearizable germs and non-linearizable analytic diffeomorphisms of the circle, including a negative answer to a question of Arnol'd.

*Leonid Polterovich* for his work in several domains of geometry and dynamical systems, in particular in symplectic geometry, including the bringing together of complex analytic and dynamical ideas in a unique way that leads to significant progress in both directions.

#### David A Brannan

### CONGRATULATIONS

Congratulations to Michael Victor Berry, FRS, who received a Knighthood in the Queen's Birthday Honours.



2nd EUROPEAN OF MATHE 21 - 27 Jul Budapest

LMS Booth



Timothy Gowers, Richard Pinch and Charles Goldie



The President adit Mathematical sci



A.B. Zizcenko, J-P. Serre and J.A. Erdos



Meetings & Membership

### AN CONGRESS HEMATICS July 1996 St Hungary



John Erdos and Paul Erdös





adits the Canadian alsciety President



nipid Publication Secretaries

The Society Meeting



Professor Erdös and Professor & Mrs Hirzebruch

### ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

**Retirement of Sir Michael Atiyah** Sir Michael Atiyah will retire as Director of the Isaac Newton Institute for Mathematical Sciences on 30 September 1996. A meeting and reception to mark his retirement, and that of Sir Peter Swinnerton-Dyer as Executive Director, will be held at the Institute on Friday 4 October 1996. The meeting and reception are open, and all interested mathematicians and mathematical scientists are cordially invited to attend. The programme is as follows:

- 15.00 16.00 Working with Michael
   F. Hirzebruch (Max Planck Institute for Mathematics, Bonn)
- 16.00 16.30 Tea
- 16.30 17.30 The Arithmetic of Plane Cubics John Tate (University of Texas)
- 17.30 17.45 Unveiling Ceremony of John Robinson's sculptures Genesis and Creation
- 17.45 18.45 Reception

Four-Dimensional Geometry and Quantum Field Theory There will be a six-week programme at the Newton Institute on Four-dimensional Geometry and Quantum Feld Theory from 4 November to 13 December 1996. It will be devoted to new ideas of duality in quantum field theory and the implications for geometry. Key speakers include E. Witten, C. Taubes and P. Kronheimer. The organisers are M.F. Atiyah and I.M. Singer.

Applications are invited from all those interested in participating. Limited financial assistance may be available. Special efforts will be made to assist young mathematicians from the UK (including graduate students).

Further details may be obtained from the Newton Institute. Please contact the Institute Administrator, Ann Cartwright (e-mail: a.cartwright@newton.cam.ac.uk; tel: 01223 335981).

Forthcoming conferences The following conferences will take place at the Newton Institute as part of the current programme The Mathematics of Atmosphere and Ocean Dynamics: *Euroconference: Ocean Dynamics* (9-13 September 1996) Topics include, but are not limited to, thermocline theory, interaction of flow with topography, interannual variability and bifurcation theory, convection, and parametrization of smallscale processes. There will be a special session in the following two weeks, in conjunction with a conference on data assimilation (see below), focusing on oceanic data assimilation and associated numerical methods.

Euroconference: Mathematical Problems in Atmospheric and Data Assimilation (16-20 September 1996) Topics include, but are not limited to, balance constraints and initialization, Kalman filter, variational methods, predictability and singular vectors, and Hilbert space methods. Discussion of problems involving oceanic models will be encouraged.

The Numerical Mathematics of Weather Dynamics (23 - 27 September 1996) This conference will provide a forum for those interested in new numerical methods applied to atmosphere and ocean dynamics, including numerical weather prediction (NWP). In particular we seek a new appreciation of how fluid-dynamical conservation laws, for example potential vorticity, connect with the symplectic geometric structure of the underlying equations of motion. A major challenge for the programme will be to bring ideas from geometry, numerical analysis and the theory of dynamical systems to bear on the practical and urgent problems of weather forecasting, ocean and climate modelling.

Further information and application forms for all the above conferences are available via the Newton Institute's WWW server at http://www.newton.cam.ac.uk or from Michael Sekulla at the Newton Institute, to whom completed applications should be sent (e-mail: m.sekulla@newton.cam.ac.uk, tel. 01223 330119).

### POSTDOCTORAL POSITIONS IN PARTIAL DIFFERENTIAL EQUATIONS AND QUANTUM MECHANICS

Pending final administrative approval, an EU-Network on the above topics has 6 postdoctoral positions (for 6 to 24 months) suitable for young researchers with a recent doctoral degree in analysis or mathematical physics. The applicants should be citizens of an EEA country (EU, Iceland, Lichenstein or Norway). The positions will be located at the institutions of the participating network partners: H. Siedentop (Oslo, heinz@math.uio.no); V. Bach (Berlin, bach@math.tu-berlin.de); W.D. Evans (Cardiff, smawde@cf.ac.uk); B. Helffer (Orsay, helffer@math.u-psud.fr); T. Hoffman-Ostenhof (Vienna, thoffman@esi.ac.at); J-P Solovej (Arhus, solovej@mi.aau.dk). Applicants should contact the network partners of their choice outside the country of their citizenship. Formal requirements on the candidates and further information can be obtained through H. Siedentop, the network coordinator.

### MATHSKILLS NEWSLETTER

This Newsletter is the first of a regular series which will be made available to all Departments of Mathematical Sciences at UK universities, to employers' organisations and employers of mathematicians in industry and commerce, to learned and professional societies and to all users of mathematics who express an interest.

To save trees, provide ease of reference and speed of dissemination, the material produced by the MathSkills team will be distributed electronically via the MathSkills Homepage on the WorldWideWeb. Initial reference material is already available at our URL (http://www.hull.ac.uk/mathskills/), which also provides links to other relevant sites. The newsletters will be at the URL (.../mathskills/newsletters/).

Comments on and potential contribu-

tions to the Webpages are most welcome: send an e-mail to the Network Assistant, Dr Neil Gordon (n.a.gordon@maths.hull.ac.uk) or write to him at: School of Mathematics, University of Hull, Hull HU6 7RX (fax: 01482-466218).

Future editions of this Newsletter will be edited from Warwick by Adrian Simpson (e-mail: a.p.simpson@warwick.ac.uk) and placed on the MathSkills Webpages. However, if you wish to continue to receive hard copy, please e-mail, fax or write to the above address, and you will be put on the mailing list. Contributions to the Newsletter should be sent to Adrian Simpson at the Institute of Education, University of Warwick, Coventry CV4 7AL.

### HISTORY OF STATISTICS

A one-day conference on the History of Statistics will be held on Saturday 12 October at Birkbeck College, London. Speakers will include: Chris Lewin on the development of actuarial science in the 17th century, Philip Kreager on the development of demography, Eddy Higgs on the statistics of the General Register Office in the 19th century, Desiree Cox-Maximov on the growth and application of statistics in the early 20th century, Anthony Edwards on the statistical work of George Udny Yule, and Eileen Magnello on the emergence of mathematical statistics as a discipline in the 19th century. For further information, please contact: Dr Eileen Magnello, The Wellcome Institute for the History of Medicine, 183 Euston Road, London NW1 2BE; tel: 0171 611-8561.

### GEOMETRY AND TOPOLOGY

Geometry and Topology is a new journal published electronically at Warwick and Berkeley and dealing with all aspects of geometry and topology and their applications. It is freely available and accepts papers only after a thorough refereeing process. It is now open for submis-

sions. For further details visit the www site (http://www.maths.warwick.ac.uk /gt/) or the ftp site (ftp ftp.maths.warwick.ac.uk then cd gt). The academic editorial board of Geometry and Topology is: Joan Birman, Simon Donaldson, Gunnar Carlsson, Ralph Cohen, Steve Ferry, Ron Fintushel, Mike Freedman, David Gabai, Cameron Gordon, Vaughan Jones, Rob Kirby, Frances Kirwan, Peter Kronheimer, Dieter Kotschick, Ib Madsen, Wolfgang Metzler, Haynes Miller, John Morgan, Tom Mrowka, Walter Neumann, Jean-Pierre Otal, Ron Stern, Gang Tian. The managing editors are: John Jones, Colin Rourke, Brian Sanderson; Geometry and Topology, Mathematics Institute, University of Warwick, Coventry CV4 7AL; e-mail: gt@maths.warwick.ac.uk.

### SYMPOSIUM ON SINGULARITIES

A Symposium on Singularities, to mark the 70th birthday of Professor Stanislaw Lojasiewski, will be held in Krakow, 25-29 September 1996. For further information contact Instytut Matematyki, Uniwersytet Jagiellonski, ul. Reymonta 4, PL 30-059 Krakow (e-mail: singular@im.uj.edu.pl; http://www.im.uj.edu.pl/singular).





### LECTURER OR SENIOR LECTURER IN STATISTICS

Applications are invited for the above continuing position in the Department of Mathematics and Statistics. The minimum qualification on appointment is the PhD degree or equivalent. Preference will be given to applicants with specialities in Biostatistics, and candidates with interests in Bayesian statistics are especially encouraged to apply. The Department has just started a new course in Biometrics and wishes to extend this program as required. Active research interests among the Statistics section within the Department include Bayesian models applied to engineering, medical, financial and industrial problems as well as applications of operational subjective statistical methods as originated by de Finetti. Extensive modern computer facilities with various packages are readily available. Appointment at the Lecturer level is anticipated; however, consideration at the higher level for outstanding candidates is possible.

The salary for Senior Lectuters is on a scale from NZ\$55,000 - NZ\$63,000 (bar) and NZ\$66,000 to NZ\$70,000 per annum; and for Lecturers is on a scale from NZ\$42,000 to NZ\$52,000 per annum.

Applications close on 30 September 1996.

Academic enquiries may be made to Professor John Deely (tel. [64 3] 364 2699, Fax [64 3] 364 2587, Email: j.deely@math.canterbury.ac.nz). The University's World Wide Web address is: <a href="http://www.regy.canterbury.ac.nz/home.html">http://www.regy.canterbury.ac.nz/home.html</a>.

Further particulars and Conditions of Appointment may be obtained from Appointments (45213), Association of Commonwealth Universities, 36 Gordon Square, London WC1H 0PF, UK (tel. 0171 387 8572 ext. 206; fax 0171 813 3055; email: appts@acu.ac.uk). Applications, quoting Position No. MT15, must be airmailed to:

The Registrar, Attention: Staffing Section, University of Canterbury, Private Bag 4800, Christchurch, New Zealand.

The University has a policy of equality of opportunity in employment.

### THE FIELDS MEDAL

Fields Medals, for outstanding achievement in mathematics, have been awarded at the International Congress of Mathematicians since 1936. Queries about the awards are received occasionally at the Society's Office so it is felt that publication of a full list of Fields Medallists might be of interest.

- 1936 L.V. Ahlfors (Harvard University) Jesse Douglas (M.I.T.)
- 1950 Laurent Schwartz (University of Nancy) Alte Selberg (Institute for Advanced Study, Princeton)
- 1954 Kunihiko Kodaira (Princeton University) Jean-Pierre Serre (University of Paris)
- 1958 Klaus Friedrich Roth (London University) Rene Thom (University of Strasbourg)
- 1962 Lars V. Hormander (University of Stockholm) John W. Milnor (Princeton University)
- 1966 Michael Francis Atiyah (Oxford University)
  Paul J. Cohen (Stanford University)
  A. Grothendieck (University of Paris)
  Stephen Smale (University of

California, Berkeley)

- 1970 Alan Baker (Cambridge University) Heisuke Hironaka (Harvard University)
  - S.P. Novikov (Moscow University)

J.G. Thompson (Cambridge University)

- 1974 Enrico Bombieri (University of Pisa) David Mumford (Harvard University)
- 1978 Pierre Deligne (IHES) Charles Fefferman (Princeton University) Gregori Margulis (Inst. Prblm. Inf. Trans.) Daniel Quillen (M.I.T.)
- 1982 Alain Connes (IHES) William Thurston (Princeton University) Shing-Tung Yau (Institute for Advanced Study, Princeton)
- 1986 Simon Donaldson (Oxford University)
  - Gerd Faltings (Princeton University)

Michael Freedman (University of California, San Diego)

- 1990 Vladimir Drinfeld (Phys. Inst. Kharkov)
  Vaughan Jones (University of California, Berkeley)
  Shigefumi Mori (Kyoto University)
  Edward Witten (University Princeton)
  1004 Biagra Louis, Lions (Université de
- 1994 Pierre-Louis Lions (Université de Paris-Dauphine) Jean-Christophe Yoccoz (Université de Paris-Sud) Jean Bourgain (Institute for Advanced Study, Princeton) Efim Zelmanov (University of Wisconsin)

The above information was supplied by the Fields Institute for Research in Mathematical Sciences, 222 College Street, Toronto, Ontario, Canada M5T 3J1.

### EUROPEAN WOMEN IN MATHEMATICS WEB PAGE

EWM is pleased to announce the launch of its new Web page. The address is http://www.math.helsinki.fi/EWM. Comments or material for inclusion should be sent to the EWM Web editors at ewm@risc.uni-linz.ac.at or in case of difficulty to the EWM secretary Riitta Ulmanen at ulmanen@sophie.helsinki.fi. The next General EWM meeting will be at ICTP, Trieste, Italy, 12-17 December 1997. The general topic will be "Women in Mathematics - North, South, East and West". The mathematical topics will be announced later. For more information contact Riitta Ulmanen as above.

### Unlock the power of MuPAD... and let the results speak for themselves

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### INTERVIEW WITH SIR MICHAEL ATIYAH

The following report by Pearce Wright of a discussion with Sir Michael Atiyah appeared in the July 1996 issue of EPSRC Newsline and is reprinted by kind permission of EPSRC.

### Supporting the Rigorous Assessment of Research

Concern for the peer review system; the advantage of diverse sources of funding for research; and the value of the annual national Science Week in advancing a wider public interest in science. These are among the issues Sir Michael Atiyah discussed with Pearce Wright, during an interview focusing on the health of research and training on the third anniversary of the White Paper, *Realising our Potential*, which led to the reorganisation of scientific activities in Britain.

As immediate past-President of the Royal Society, Master of Trinity College, Cambridge, and a mathematician whose research into the underlying laws of nature has won major international recognition, Michael Atiyah occupies an advantageous position from which to observe the impact of the changes introduced by the White Paper on science, engineering and technology. In his annual report to the Royal Society in 1993, he applauded the emphasis placed by the Government on the need to promote and assist the potential of the country's most imaginative and highest-quality scientists. Three years on, he has some misgivings about some effects of the White Paper strategy. Sir Michael certainly endorses the principle that "the wealth of nations has come to depend more and more on the knowledge and skills of their people". He regards the White Paper objectives as reasonable. His reservations reflect the worries of academic scientists "out in the field" who have difficulties in getting research support; the concerns relate in particular to a fast-track channel for awarding grants to people who have contacts in industry the Realising our Potential Award (ROPA).

This channel also has a downside, in Michael Atiyah's view. It has created two different mechanisms for assessing research, he says: one that selects research

primarily because it has possibilities for industry; the other being the established and rigorous process of peer review. He says that with two distinct standards for selecting research, mediocre work might slip through the "fast track" mechanism at the expense of funding for first-class science. "That concern has been expressed to me, and I have no evidence to disprove it," Michael Atiyah said.

He says governments will naturally want to influence developments in science to make them more relevant to particular aspects of the British economy. "The most important part of governmentfunded science is as an investment in the future. Investment has many forms, and the most crucial one is in people and training. If, as a country, we don't invest enough, then we are not going to reap the rewards 10 years down the line. The problems of the country are not solved overnight by changing the structure of the research councils. They are solved by putting in more over decades investment."

Michael Atiyah believes "decisions made at the top in the national interest should give firm steers here and there", rather than involve sudden lurches in the hope of short-term gains. He is adamant that, once it comes to the mechanics of allocating grants themselves, the process must always involve a rigorous quality assessment. "Rigorous assessment doesn't prevent the setting of broader national objectives and strategies to push research in particular directions." He underlines his theme: "When money is short it is even more important to weed out second- or third-class research not worth supporting.

Sir Michael spurns those critics who rushed to write an epitaph for the former Science and Engineering Research Council as a lumbering bureaucracy. He said: "It worked, as long as you were patient. But that applies to most organisations accountable for spending large amounts of government money. Greater efficiency could certainly minimise delays, through the use of new technology and without compromising the fundamental principle of identifying the best science." Striking the right balance is not easy, and there is no single formula offering a panacea, he says. Sir Michael suggests that there is probably a need for an external advisory group to monitor the balance between work selected using industry-linked criteria and peer-reviewed science that gets research council support.

While Michael Atiyah says the Government's consultation exercise in preparing the White Paper was near faultless, he believes the research system is now more firmly under government control and more closed to outside influence than before. As a champion of a diversity of funding for research, he supports the remnants of the dual support system, through which the Higher Education Funding Councils provide laboratory infrastructure and equipment for universities and other higher education institutes. He believes the concentration of resources carries the risk of making mistakes on a bigger scale. He regards the EPSRC as a reasonable size for the efficient management of the range of disciplines it must cover. Nevertheless, a diversity of funding such as the dual support system demands good coordination between research and education. It is also an antidote to the widely held and damaging misconception that there is one type of "sausage" machine called student training, and a separate entity called research to support British industry. He views science as a continuum from school and undergraduate education, through PhD research and training with research council support that includes making contacts with the non-academic world.

The idea that the existence of academic research is to find technical solutions to outperform the Japanese is a seriously mistaken, if prevalent, attitude. Indeed, a recent survey published by the National Academies' Policy Advisory Group, which includes the Royal Society, concludes that British universities do not have the capacity to deliver what the White Paper asks of higher education. Michael Atiyah regrets the move of the Office of Science and Technology (OST) from the Cabinet Office to the Department of Trade and Industry (DTI). He believes the mere implication that science was somehow subordinate to Trade and Industry conveyed the wrong message. Although the reality is that science is much wider, perceptions are important. The impression now of the OST is of a group, tucked in the corner of a large department, which cannot expect the same attention as a free-standing body in a key position of government with a Cabinet minister in charge. So it has lost its relative influence.

For decades science lived in the shadow of primary schools, the schools curriculum, teachers' and lecturers' pay, and scores of other issues, when it was the junior partner in the Department of Education and Science. Reassurances that it will not suffer a similar fate at the DTI have made little impression on Sir Michael. A look at the real world shows that once machinery is set up, it has a habit of taking over. There are other organisational drawbacks to make the DTI an unsatisfactory permanent home, in his opinion. Links with the education department were retained readily from the OST from its base in the Cabinet Office. Now that the OST is a small unit in the DTI, with no ministerial responsibilities for education, bigger barriers have to be crossed. Sir Michael said: "No other country has found an ideal solution. The best is one which allows research and education to flourish together."

On a broader front, he says the Royal Society exists to represent the voice of science, especially one that is not subject to ministerial edict. Most recently, it has endeavoured to inform the public about the complex science and health questions of BSE (so-called mad cow disease) and its possible link to the human brain disease CJD that need raising but that are relegated to the sidelines by political and commercial interests, and the media. Sir Michael has no illusions about the difficulties. He points to a long-standing concern over mathematics. Although, in general, the population is not very competent at maths, it needs to understand how figures are used to avoid being misled by a mass of statistics and figures used by politicians and others, he says. But he is encouraged by the success of the national Science Week (SET96) in focusing attention on science and in stimulating what he believes is a great latent interest in science, engineering and technology.

### THE SOCIETY OF FRIENDS OF OBERWOLFACH

The Mathematical Research Institute at Oberwolfach is formally managed and operated by the Society for Mathematical Research (die Gesellschaft für Mathematische Forschung). The Society of Friends of Oberwolfach (Verein zur Förderung des Mathematischen Forschungsinstituts Oberwolfach) was founded in February 1992; its main aim is to enhance the financial flexibility available for the management of the Oberwolfach Institute, to try to ensure the maintenance of the traditional friendly atmosphere at the meetings at Oberwolfach.

The London Mathematical Society is an institutional member of the Society of Friends of Oberwolfach; individuals may also join. The annual membership subscription for individuals is DM100, but an equivalent sum in any other currency, or any larger contribution, would be very welcome. Alternatively, payment can be made by Visa, Mastercard or Diners Club credit card, but in that case the amount of the payment must be given in German Marks. If you would like to join, please complete a copy of the form below and send it to the Treasurer of the Society of Friends of Oberwolfach at the address shown. Confirmation of your membership and a receipt for your subscription will be sent as soon as possible.

To: Professor Dr J. Lehn, Treasurer, Society of Friends of Oberwolfach, Technische Hochschule Darmstadt, Fachbereich Mathematik, Arbeitsgruppe Stochastik und Operations Research, Schlossgartenstrasse 7, D-64289 Darmstadt, Germany

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### DIARY

The diary lists Society meetings and other events publicized in previous issues of the Newsletter. For further information, refer to the figure in brackets, which is a cross reference to the LMS Newsletter number.

### **SEPTEMBER 1996**

2-6 Diophantine Analysis and its Applications, Minsk, Belarus (237)

4-11 Graduate School in Differential Geometry, Durham University (239)

9-13 Vapnik-Chervonenkis Dimension Workshop, ICMS, Edinburgh (240)

9-14 Drinfeld Modules, Modular Schemes and Applications Instructional Meeting, Belgium (236)

9-27 School on Numerical Simulation of Partial Differential Equations: Methods, Algorithms, Applications, ICTP Trieste (230)

11-12 British Topology Meeting, Leicester University (238)

11-16 Europroj 96, Liverpool University (237)

13-15 Mathematics in the Real World Meeting, Pembroke College, Cambridge (240)

15-21 Aspects of Functional Analysis, EPSRC-LMS Short Course, York University (238)

16-17 Probabilistic Methods in Polymer Physics Conference, ICMS, Edinburgh (240)

#### **OCTOBER 1996**

6-10 Mathematics Applied to Biology and Medicine Conference, Heidelberg, Germany (237)18 London Mathematical Society Meeting, Cayley-Sylvester Centenary Meeting on Invariant Theory, Linnean Society, London

### **NOVEMBER 1996**

15 London Mathematical Society Annual General Meeting, Presidential Address, Linnean Society, London

### **DECEMBER 1996**

9-13 Discrete Mathematics and Theoretical Computer Science Conference, Auckland, New Zealand (238)

### **FEBRUARY 1997**

21-22 Group Theory, Two-day London Mathematical Society Meeting, Oxford

#### **APRIL 1997**

8-11 Fractals in the Natural and Applied Sciences, Denver, Colorado, USA (233)

14-17 British Mathematical Colloquium, Royal Holloway & Bedford New College

14-18 LMS Invited Lectures, Birmingham University, Professor J.L. Alperin (238)

#### **MAY 1997**

21-22 Two-day London Mathematical Society Meeting, Liverpool

#### **IUNE 1997**

20 London Mathematical Society Meeting, Linnean Society, London

#### **JULY 1997**

7-11 British Combinatorial Conference, Queen Mary & Westfield College, London (230)

#### **APRIL 1998**

6-9 British Mathematical Colloquium, Manchester University

### **AUGUST 1998**

18-28 International Congress of Mathematicians, Berlin, Germany (238)

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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