

# THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 274

September 1999

**FORTHCOMING SOCIETY MEETINGS**  
*Friday-Saturday 15-16 October 1999 - London*  
New Applications of Twistor Theory  
*Friday 19 November 1999 - London*  
Annual General Meeting  
J. Matoušek, W.T. Gowers

## COUNCIL DIARY 18 June 1999

A major item of business at the June Council meeting is the Treasurer's budget proposal for the coming year. A large part of this (over £200,000 for next year) is the budget for the Programme and Research Meetings Committees, through which much of the Society's support for meetings is channelled. Also included are some other single external commitments, and at the meeting we considered the renewal of the Society's grant to the Isaac Newton Institute in Cambridge. There have been extended and positive discussions with the Institute concerning its role as a national centre for mathematics. Council recognised the steps the Institute was taking to inform and involve the whole UK mathematical community, and agreed to make an annual grant of £20,000 for a five-year period, to be spent on supporting UK mathematicians attending the Institute's programmes. We also approved a grant of £5,000 for the coming year to support the activities of the Mathematical Research Centre at Warwick.

On the income side, but still in keeping with the Society's charitable aims, we learnt that the Treasurer had let a part of De Morgan House to the Hamilton Trust, which will use it for the Maths Year 2000 project.

Council received the resignation of Ursula Martin from the Computer Science Committee, of which she had been a member since 1991, and Chair since 1995, and from Council. Ursula's many contributions to the Society's activities include her work in connection with the Foresight programme, and above all the launching of the MathFit initiative, a highly successful joint LMS/EPSRC venture. Council thanked her warmly for her work for the Society.

The first report of the Committee for Women in Mathematics, established as a result of discussions at the February Retreat, was received. Council welcomed warmly the proposal to host an annual lecture in memory of Dame Mary Cartwright, which it is planned to launch early next year.

Tony Scholl

## NEWS FROM DE MORGAN HOUSE

We welcome two new people to De Morgan House - one quite new, and one very familiar.

Helen Woodward has been appointed as Secretary. Besides working for the Executive Secretary and Administrator, she will also be looking after the needs of the Society's Officers and Committee

Chairman. It is planned to refurbish the Society's web-pages, and she will also be involved with this, and with the subsequent maintenance of the web-pages.

Alan Pears needs little introduction. Having served on Council and as Meetings and Membership Secretary, he is at present the Obituaries Editor for the *Bulletin*. The Society has recently signed a contract with EPSRC to organise and run Short Instructional Courses - up to five one-week courses a year are envisaged - and Alan has been appointed as Facilitator for this. Although, he will be based in De Morgan House, he will of course spend much time travelling around the country organising the courses. More information about these courses appears elsewhere in this *Newsletter*. If you are interested in running a Short Instructional Course, please contact Alan Pears at De Morgan House or Elmer Rees at the University of Edinburgh.

We also have new tenants in the lower ground floor. The Hamilton Trust, a mathematical charity, has been appointed by DfEE to run Mathematical Year 2000, which is intended to do for mathematics what the recent Literacy Year has done for reading and writing. We have leased an area in the lower ground floor to the Hamilton Trust as their office for this until April 2001. The project director is Barry Lewis, who has been a member of the Society since 1995. This conjunction will surely be of benefit to both sides, and we look forward to learning a great deal from MY2000's activities, and hope that we can help them in their work.

### VISIT OF PROFESSOR S. ALBEVERIO

Professor Sergio Albeverio (Universität Bonn) will visit the United Kingdom during the week commencing 4th October. He will speak at Imperial College (Monday 4th), University of Hull (Tuesday 5th) and Warwick University (Wednesday 6th, Midlands Probability Seminar). For locations and times of the talks contact: Dr Z. Brzezniak (z.brzezniak@maths.hull.ac.uk); Professor K.D. Elworthy (kde@maths.

warwick.ac.uk) or Professor B. Zegarlinski (b.zegarlinski@ic.ac.uk). This visit is receiving support from the LMS under a Scheme 2 grant.

### VISIT OF PROFESSOR V.I. INOZEMTSEV

Professor V.I. Inozemtsev, a research fellow at the Laboratory of Theoretical Physics of the Joint Institute of Nuclear Research in Dubna, Russia, works on integrable models of statistical mechanics and theory of multidimensional Riemann theta functions. He will visit the University of Leeds for one month in October-November under the LMS International Short Visits Scheme 5. He will give an Algebra Seminar in Leeds on October 11 entitled "Invariants of linear combinations of transpositions". It is anticipated that he will also visit the University of York on October 20 and Edinburgh University on October 25-27 where he will give seminars on "Bethe Ansatz equations for quantum spin chains with elliptic exchange". Further details about his visit can be obtained from Dr Vadim Kuznetsov (vadim@amsta.leeds.ac.uk).

### VISIT OF PHAM ANH MINH

Professor Pham Anh Minh from the University of Hue, Vietnam, works on Group Cohomology, especially the cohomology of  $p$ -groups. During August he visited the University of Southampton and since the 26th has been at the University of Manchester until mid-September. For further information contact Grant Walker (grant@ma.man.ac.uk). This visit is receiving support from the LMS under a Scheme 5 grant.

### DEPARTMENTAL NEWS

**Newcastle University** Dr C.G. Campbell, Dr S.E. Rees and Dr A. Shukurov have been promoted to Readerships. Dr A.M. Constantin, Dr M.A. Dritschel and Dr G. Sarson have been appointed to lectureships.

# LONDON MATHEMATICAL SOCIETY

## TWO-DAY MEETING

Friday 15th and Saturday 16th October 1999

### NEW APPLICATIONS OF TWISTOR THEORY

#### Friday

- 2:15 K. P. Tod (Oxford) *Twistors in a Lorentzian World*  
3:30 M. G. Eastwood (Adelaide) *Involutive Structures in Twistor Theory*  
4:30 Tea  
5:00 N. J. Hitchin (Oxford) *Hyperkähler Geometry and Integrable Systems*  
7:00 Dinner

#### Saturday

- 9:15 S. Merkulov (Glasgow) *Twistor Solution of the Holonomy Problem*  
10:15 Coffee  
10:45 L. J. Mason (Oxford) *Twistors and Integrability*  
12:00 Sir Roger Penrose (Oxford) *The Physics Programme of Twistor Theory, Especially General Relativity*

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Lectures will be held at University College.

A number of hotel rooms have been booked near University College; the reservations will be held until **Friday 1st October**. Those wishing to stay overnight in one of these rooms should contact Miss Susan M. Oakes, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HP (oakes@lms.ac.uk), by that date (single rooms cost about £40-45 per night).

Some funds are available to contribute in part to the expenses of members of the Society or research students who wish to attend the meeting. Requests for support should be addressed to the Meetings and Membership Secretary, London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HP, e-mail: lms@lms.ac.uk (requests should include an estimate of expenses and a very brief *curriculum vitae*; research students should include brief letters of endorsement from their supervisors).

# LONDON MATHEMATICAL SOCIETY

## NOTICE OF GENERAL MEETING

There will be a General Meeting of the Society on Friday 15 October 1999 at 5.00 pm in London to consider a proposal by the Council of the Society to delete the existing By-Laws II,1 and II,3 and to substitute those printed below.

The effect of these changes is to increase the annual subscription of Ordinary Members for 1999-2000 by £1.50 and of Associate Members by 50p, and to increase the annual subscription of Corporation and Institutional Members for 1999-2000 to £561 from the 1998-99 level of £521. The prices per volume of the *Bulletin*, the *Journal* and the *Proceedings* to individual members for 1999-2000 will also be increased by £1.50. In addition, this year for the first time subscriptions are required for the electronic *Journal of Computation and Mathematics*; for individual members this will be set at £15.

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

The annual subscription to the Society of Ordinary Members for the 1999-2000 session shall be £20.50. The annual subscription to the Society of Associate Members for the 1999-2000 session shall be £6.00. The prices of the Society's periodicals to Ordinary, Associate and Reciprocity Members for the 1999-2000 session shall be: *Proceedings* £20.00 per volume, *Journal* £20.00 per volume, *Bulletin* £20.00 per volume, *Journal of Computation and Mathematics* £15.00 per volume.

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

The annual subscription to the Society of Corporation and Institutional Members for the 1999-2000 session shall be £561, inclusive of one volume of the *Bulletin* and of the *Journal of Computation and Mathematics*, and of 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 £20.50 for each Representative in excess of one.

## LMS PRIZES 1999

### Polya Prize

PROFESSOR SIMON DONALDSON, FRS, of Imperial College, London is awarded the 1999 Polya Prize for his groundbreaking work in geometry and topology. In the early papers, which developed from his thesis, he showed how the Yang-Mills equations in four dimensions could be used as a tool for analysing four-manifolds themselves. This led to completely unexpected results in low-dimensional topology for which he won a Fields Medal in 1986, and to a whole new and very active area of mathematical progress.

In another direction, he has, by using moment maps in symplectic geometry, found a number of new models for important moduli spaces in geometry and mathematical physics. In his current work these methods promise to yield new results in complex geometry. Another recent achievement is a deep theorem which has made possible the use in symplectic geometry of Lefschetz's fruitful method of studying algebraic varieties by pencils of hyperplane sections. These outstanding creative achievements, together with the powerful influence which he has exerted on mathematics through his students and colleagues, fully merit the award of the Polya Prize.

### Senior Whitehead Prize

PROFESSOR M.J.D. (MIKE) POWELL, FRS, of the University of Cambridge is awarded the Senior Whitehead Prize. He is one of the founders of the modern field of numerical optimisation and he has also had profound influence on the field of numerical approximation of functions. Since the early 1960's he has been regarded as one of the leading numerical analysts in the UK and world-wide.

Powell became famous in 1963 as one of the originators of the first quasi-Newton iterative method in non-linear optimisation, now known as the Davidon-Fletcher-Powell (DFP) update. His contributions to the field of approximation of functions have been equally extensive. Perhaps his greatest impact in this area has come with

his investigations of radial basis functions for multivariate approximation in the past decade. With various students and collaborators, he has developed unexpectedly fast and powerful algorithms for this kind of data fitting and an extensive and elegant mathematical theory that have become the standard tool in use today for the interpolation of scattered multivariate data.

Mike Powell has been recognised many times, including the award of the Naylor Prize and Lectureship by the LMS in 1983. He is the only numerical analyst in the Royal Society. A more personal indication of the esteem in which he is held by his colleagues is the tradition established since the 1960's at the biennial Dundee Conference on Numerical Analysis that every two years, unless he is unable to attend because of visits abroad, Mike Powell is always an invited speaker.

### Junior Berwick Prize

DR DAVID BURNS, of King's College, London, is awarded the Junior Berwick Prize, for his article *Adams operations and wild Galois structure invariants*, (Proceedings of the London Mathematical Society (3) 71 (1995), 241-262). In this article he provided a completely new insight into Galois structure theory. He has been at the forefront of recent developments in the study of certain algebraic structures, which arise in arithmetical algebraic geometry. Here his most spectacular success to date is his work, part independent and part joint with M. Flach, on the special values of L-functions. This provides an equivariant generalization of the work of Bloch-Kato. He has, thereby, both provided a strikingly coherent overview of many existing results and conjectures, and he has also raised many new and interesting questions. This is a most inspiring piece of work, which will set the agenda for many researchers in the years to come.

### Junior Whitehead Prizes

DR MARTIN BRIDSON of Oxford University is awarded a Junior Whitehead Prize for his outstanding work in geomet-

ric group theory. The work of Thurston and Gromov in the 1980's has transformed the study of finitely generated groups. Powerful new geometric techniques are being increasingly used alongside the more traditional algebraic and combinatorial methods. Bridson has played a leading role in these developments.

Much of Bridson's work has concerned cocompact groups of isometries of non-positively curved spaces, the so-called CAT(0) spaces. In later work, he and Mosher showed that if a closed 3-manifold has a path-metric of non-positive curvature then either its fundamental group is  $\delta$ -hyperbolic or it contains a free abelian rank two subgroup, in which case the manifold satisfies Thurston's geometrization conjecture and supports a Riemannian metric of non-positive curvature. Bridson has also been at the forefront of applications of formal languages to group theory. Bridson is a splendid advocate for the introduction of geometric methods in group theory. He is noted for his lucid exposition both in lectures and in print. His infectious enthusiasm for the subject has resulted in his participation in numerous productive collaborations.

PROFESSOR GERO FRIESECKE of the University of Oxford is awarded a Junior Whitehead prize in recognition of important contributions to the mathematical analysis of problems in continuum mechanics, materials science and mathematical physics. His work exhibits a rare ability to transfer ideas between science and mathematics to the benefit of both.

In the analysis of microstructure, he obtained a necessary and sufficient condition for the attainment of a minimum in scalar-valued variational problems, and together with J.B. McLeod proved fine results concerning the unexpected difference between the dynamic behaviour of solutions to a model of one-dimensional viscoelasticity and the behaviour of minimizing sequences for the corresponding variational problem. In a breakthrough with J.A.D. Wattis, he proved the existence of solitary waves on a lattice without invoking integrability, and showed with

R.L. Pego that these waves are stable. More recently he has studied the foundations of density functional theory, and has given a rigorous proof of the famous formula of Dirac for the exchange energy.

PROFESSOR NICHOLAS HIGHAM of the University of Manchester, is awarded a Junior Whitehead Prize. Despite his youth, he has established himself as one of a handful of international leaders in the field of numerical linear algebra. Among the problems in this field he has advanced are symmetric indefinite systems of equations, Vandermonde systems, tridiagonal and triangular systems, least-squares and constrained least-squares, eigenvalues, generalised eigenvalues, singular value decomposition, polar decomposition, pseudospectra, iterative refinement, condition number estimation, matrix square roots, the Sylvester equation, and fast matrix multiplication by Strassen's algorithm.

His book *Accuracy and Stability of Numerical Algorithms* (1996) is an encyclopedic survey without parallel in the field, and his *Handbook of Writing for the Mathematical Sciences* (1998) is a SIAM best-seller read by mathematicians of all specialities. In his comprehensive influence across numerical linear algebra, Higham is the natural heir to James Wilkinson, FRS, a legendary figure in this field who died in 1986.

DR IMRE LEADER of University College, London, is awarded a Junior Whitehead Prize. He has made major contributions to several areas of combinatorics. Among his results are the first known exact isoperimetric inequality for which the extremal sets are not nested, powerful results in infinite Ramsey theory concerning monochromatic solutions to systems of linear equations and the solution of the notoriously difficult bounded graph conjecture. Leader writes beautifully clear papers, even when his arguments are extremely complex. His success comes from a combination of great technical skill, a willingness to pursue a problem to beyond the point where many mathematicians would have given up and a strong desire to find short and comprehensible proofs whenever he possibly can.



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Editorial

2199  
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V.V. Batyagin  
New mathematical results in probability theory  
(P. Ben Arous, P. Diaconis, P. Diaconis)

R. Farber  
On the local fundamental group of a manifold  
(S. Ferry, J. Rosenberg)

A. Gasharov, D. Laksov, P. Tenev  
On the Chern character of a complex manifold  
(S. Ferry, J. Rosenberg)

L. Pflaum  
On the Chern character of a complex manifold  
(S. Ferry, J. Rosenberg)

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### MEETING IN HONOUR OF ROGER CARTER'S 65TH BIRTHDAY

To celebrate Roger Carter's 65th birthday, there will be a one-day meeting on the "Representations of Algebraic Groups and Related Topics" at the University of Warwick, on Saturday 9th October. There will be four talks during the day, followed by an evening meal. All are welcome; in particular, research students are encouraged to attend.

Speakers:

- Henning Haahr Andersen, University of Aarhus.
- Meinolf Geck, University of Lyon 1.
- Peter Littelmann, Institut de Recherche Mathématique Avancée, Strasbourg.
- George Lusztig, Massachusetts Institute of Technology.

For up-to-date information, please see <http://www.mcs.le.ac.uk/~rmarsh/conf.html>. It is hoped there will be some possibility for support (a London Mathematical Society grant is being applied for). For further details, application forms for support, and registration/accommodation forms, please contact: Peta McAllister or Hazel Graley at the Mathematics Research Centre, University of Warwick, Coventry CV4 7AL, by 20th September (e-mail: [peta@maths.warwick.ac.uk](mailto:peta@maths.warwick.ac.uk) or [hazel@maths.warwick.ac.uk](mailto:hazel@maths.warwick.ac.uk)).

### MATHEMATICAL WHO'S WHERE - UNITED KINGDOM 1999 edition

This directory contains information about mathematicians and mathematics departments in universities in the UK. A copy was enclosed with the July *Newsletter* to each member with an address in the area covered by the directory. Copies are available for purchase at a price of £5.00 or US\$10.00 per copy inclusive of postage, from the London Mathematical Society, De Morgan House, 57-58 Russell Square, London WC1B 4HP. Cheques should be made payable to the 'London Mathematical Society'.

### MEETING IN HONOUR OF DAVID BURGESS'S 65TH BIRTHDAY

To celebrate David Burgess's 65th birthday which falls in February 2000, there will be a meeting in his honour at the University of Nottingham, 4-6 February 2000, organised by Roger Heath-Brown (Oxford), John Cremona (Nottingham) and Ivan Fesenko (Nottingham), with financial support from the LMS. There will be lectures both on David Burgess's contributions to analytic number theory and on recent developments in the subject. There will also be a dinner on Saturday 5 February. Invited speakers will include Peter Elliott, Roger Heath-Brown, Martin Huxley, Gerald Tenenbaum and Heini Halberstam. Limited support for graduate students can be provided. Those interested in attending should contact John Cremona by e-mail ([jec@maths.nott.ac.uk](mailto:jec@maths.nott.ac.uk)).

### COLLOQUIUM ON GENERAL TOPOLOGY

The Second Belfast Topology Colloquium (*aka* Third Galway Topology Colloquium) will be held from 1-3 September 1999 at the Department of Pure Mathematics, The Queen's University of Belfast, Belfast BT7 1NN. The primary aim of the conference is to bring together mathematicians working on various areas of General Topology and other related fields. Particular emphasis is placed on the development of research students' knowledge and skills in the discipline. A secondary aim is the further consolidation of research links in General Topology previously established between the universities at Belfast, Oxford, Galway and Birmingham. (This is the fourth such event since 1997.) The colloquium has received financial support from the London Mathematical Society. For further information contact: S.D. McCartan (tel: (+44) 1232-273661; fax (+44) 1232-335076; e-mail: [d.mccartan@qub.ac.uk](mailto:d.mccartan@qub.ac.uk)), T.B.M. McMaster (e-mail: [t.b.m.mcmaster@qub.ac.uk](mailto:t.b.m.mcmaster@qub.ac.uk)); or A. Hanna (e-mail: [a.hanna@qub.ac.uk](mailto:a.hanna@qub.ac.uk)).

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## MEETING OF THE SOCIETY

A meeting of the London Mathematical Society was held on Friday 18 June 1999 at University College, Professor M.J. Taylor, FRS, President in the chair. About 35 members and visitors were present for all or part of the meeting.

Eleven people were elected to Ordinary Membership: J.W. Essam, I.G. Graham, J. D.E. Grant, F. Kolaneci, S. Langley, J.E. Martin, A.G. Reznikov, R. Smith, J-M Vanden-Broeck, T. Voronov, A. White. Two people were elected to Reciprocity Membership: V.M. Rothos (American Mathematical Society) and K.E. Skoldberg (Swedish Mathematical Society). Five members signed the book and were admitted to the Society.

The President, on Council's behalf, proposed that Professor John Tate be elected to Honorary Membership of the Society and read a short version of the citation.

A lecture was given by D. Salamon on 'Floer homology, Seiberg-Witten invariants and Lefschetz fibrations'. After tea, a general meeting was held on a motion proposed by Council, it was agreed to delete By-Laws 1.7, 1.8, and 1.9, and to replace them by the following:

- By-Law I.7. Each member voting shall make use of the list as a balloting list by clearly indicating for candidates in each category the member's order of preference for candidates.
- By-Law I.8. Each completed balloting list shall be placed inside a voting envelope addressed to "The Scrutineers, London Mathematical Society", and the envelope shall be sealed and then validated with the voter's signature and legibly written name. Any vote not validated in this way shall be held to be null and void.
- By-Law I.9. Members who are unable to attend the Annual General Meeting shall be allowed to vote in the election of the Council and Officers by sending their voting envelopes, duly sealed and validated, to "The Scrutineers, London Mathematical Society" to reach the Registered Office of the Society at least 8 days before the time appointed for the Meeting. Such votes will then be given by the Scrutineers acting as proxy for such Members.

The Ordinary meeting then resumed, and the Hardy Lecture was given by D. McDuff on 'Symplectic topology today'.



Reception held in the garden of De Morgan House, for Dusa McDuff and Dietmer Salamon, after the Meeting of the Society.

## LMS RESEARCH MEETINGS COMMITTEE

The Committee supports three types of activities.

Ideas for proposals in any of the categories are best discussed at an early stage with the Committee, normally through its Chairman, Professor E.G. Rees (elmer@maths.ed.ac.uk).

### **Durham Symposia**

The LMS Durham Research Symposia began in 1974, and have now become an established series of international research meetings, with over 60 symposia to date. They provide an excellent opportunity to explore an area of research in depth, to learn of new developments, and to instigate links between different branches. The format is designed to allow substantial time for interaction and research. The meetings are held in July, usually lasting for 10 days, with up to 70 participants, at least half of whom will come from the UK. Lectures and seminars take place in the Department of Mathematical Sciences, University of Durham, and participants are housed in en-suite accommodation at nearby Grey College.

Detailed proposals are made at least two years ahead. Each symposium is funded by a substantial EPSRC research grant, covering the subsistence costs of all participants, and some travel costs. The LMS Research Meetings Committee asks experts for their opinions of the proposal and after discussions, the Committee decides whether to support the proposal. It then makes suggestions for improvements and when these are in place an application for support is made to EPSRC. To ensure this is successful, the application must include a strong case that the science is of a very high level and a detailed explanation of the likely benefits.

Proposals for Durham Symposia for 2002 should be made to the London Mathematical Society by 1 May 2000. Anyone wishing to make a proposal should inform Professor E.G. Rees as soon as possible and in any case by 1 February 2000, in order to discuss the proposed Symposium

and the form which the proposal should take.

Organisers of Durham Symposia are required to make both an academic report and a financial report, after the meeting has taken place.

### **LMS Workshop-Symposia**

The Society funds a number of workshops and small symposia. The format is very flexible and they can be held anywhere in the UK. The topic can vary from being quite specialised and suitable for an intensive period of work to one that needs to be exposed to the UK community. When assessing a proposal the LMS Research Meetings Committee will seek expert advice, make suggestions and before offering support it will need to be convinced that the benefits to UK mathematics are likely to be significant.

Applications for a total expenditure in the range £4K to £10K will be entertained. Exceptionally, the Committee will consider proposals for which there is other major support. Applications for smaller amounts can be made for LMS Conference Grants, which are handled by the LMS Programme Committee.

Detailed applications should be made to Professor E.G. Rees as soon as possible and in any case at least 15 months prior to the meeting. The application should include the scientific case, names of likely participants (including the likely number of post-graduates), the proposed venue arrangements and detailed costs. Applicants are advised to consult Professor Rees about their proposed programme before making a formal application.

Organisers of workshops and small symposia are required to make both an academic report and a financial report, after the meeting has taken place.

### **LMS/EPSRC Short Instructional Courses**

The main purpose is to provide courses of lectures for postgraduate students. There are normally three intensive courses of lectures each at the rate of one hour per day for about a week. The material should be

accessible to first year PhD students and should be broad enough to attract at least 30 UK students. Numbers are usually limited to 60-70, with up to a quarter of the participants coming from overseas. Problem sheets and tutorial classes should be provided by the lecturers (with assistance, usually from post-docs), to help the students understand the material in depth. A few special lectures on related (possibly more advanced) material can also be included. The lecturers, tutors and organisers of Short Courses receive honoraria for their work.

Participants are required to pay a registration fee (which in the case of EPSRC students is expected to be paid from RTSG funds). Sufficient funds are provided to meet the full subsistence and accommodation costs (but not the travel costs) of at least 30 research students at UK universities.

Organisers of short courses are required to make both an academic report (including the results of a questionnaire distributed to the participants) and a financial report, after the meeting has taken place.

Anyone who is interested in organising a Short Course is asked to consult either Professor E.G. Rees or the Facilitator for Short Courses, Dr Alan Pears at De Morgan House in the first instance.

### **FACILITATOR FOR SHORT COURSES**

The approval of a contract between the Society and EPSRC formalizing the arrangements for the LMS/EPSRC Short Instructional Courses was announced in the Council Diary in the July 1999 issue of the *Newsletter*. The nature of these courses is described in the preceding article about activities of the LMS Research Meetings Committee.

Dr Alan Pears has been appointed a Facilitator for the Short Courses programme. Amongst his duties are to bring forward suggestions for topics for Short Courses and to recruit scientific organisers. Dr Pears will welcome advice, comments and suggestions from members. Please write to him at De Morgan House or send

an e-mail message ([lms@lms.ac.uk](mailto:lms@lms.ac.uk)).

The Society wishes to establish a pool of venues for the Short Courses. Proposals from Departments that would be interested in hosting a Short Course will be welcomed by the Facilitator. A member of the host department would normally act as local organiser. Please send proposals, comments or enquiries to Alan Pears.

### **ROLAND S. CLARK**

Dr Roland S. Clark, who was elected a member of the London Mathematical Society on 18 June 1945, died on 28 July 1999, aged 90.

### **THE KOUROVKA NOTEBOOK Unsolved Problems in Group Theory**

This latest 14th edition (1999, editors V. D. Mazurov and E. I. Khukhro; softcover, 126 pp, ISBN 5-88119-113-7) of "The Kourovka Notebook" has just been published. This is a collection of unsolved problems in Group Theory proposed by more than 300 mathematicians from all over the world. It has been published every 2-4 years in Novosibirsk since 1965 (now also available in English, and with the English translations for almost all references). The 14th edition contains about 900 problems in all areas of Group Theory, including more than 100 new problems and a number of comments on solved problems from the previous editions.

For more than 30 years the "Kourovka Notebook" has served as a unique means of communication for researchers in Group Theory and nearby fields of mathematics. Maybe the most striking illustration of its success is the fact that more than 3/4 of the problems from the first edition have now been solved. The English version is now available for £8.00 per copy from Professor E.I. Khukhro, 6 Llanedeyrn Close, Cardiff CF23 9ED. New problems for the next edition, solutions, and any comments and queries can also be sent to the address above, or by e-mail ([khukhro@cardiff.ac.uk](mailto:khukhro@cardiff.ac.uk), [mazurov@math.nsc.ru](mailto:mazurov@math.nsc.ru)).

## FUNCTION THEORY MEETING

A one-day Function Theory Meeting will be held at University College, London on 20th September. The speakers are: C. Penrose, D. Borwein, T.W. Ng, T. Carroll, G. Blower and F Gardiner. Further information is available from Dr Matthew Jones (matt@pc-pg.math.ucl.ac.uk). A small grant has been awarded by the London Mathematical Society for travel expenses for research students.

## GODUNOV METHODS THEORY AND APPLICATIONS

An international conference to honour Professor S.K. Godunov, the year of his 70th birthday, and to review four decades of research on Godunov methods, will be held from 18 -22 October at Oxford.

There will be a two-day short course just preceding the Godunov Conference "An Introduction to Godunov Methods" from 16 - 17 October at St Anne's College, Oxford University.

The registration procedure for both the

Conference and the Short Course is given on the website (<http://www.gswarbrick.freereserve.co.uk>). Further information can be obtained from the Conference Chairman, Professor E.F. Toro (E.F.Toro@doc.mmu.ac.uk) or Conference Organiser (gaynor@gswarbrick.freereserve.co.uk).

## MATHEMATICAL MODELLING IN BIOLOGY AND MEDICINE

A half day meeting will take place in the Division of Theoretical Mechanics at the University of Nottingham on 9th September 1999. The meeting is aimed towards PhD students and 'new' researchers but anyone wishing to attend is welcome. The meeting will consist of two invited talks and six shorter talks by PhD students. The invited speakers are Professor Philip Maini (Oxford) and Dr Sarah Waters (Cambridge). Anyone wishing to attend is advised to contact David Gammack, via e-mail (david.gammack@nottingham.ac.uk), or via the web page: (<http://spencer.nott.ac.uk/etzdg/BioWeb/BioMathHome.html>).



University  
of Durham

## Chair in Numerical Analysis

A Chair in Numerical Analysis in the Department of Mathematical Science is available from 1 April 2000 or such date as may be arranged.

The successful candidate will have an outstanding research record in any branch of Numerical Analysis. The fields of present members of the department include Finite Element and Multigrid Approximation of Differential Equations, Numerical Linear Algebra, and Polynomial Approximation and Ordinary Differential Equations. In the last Research Assessment both Pure and Applied Mathematics in Durham were graded 5.

The salary will be by negotiation within the professorial range.

For informal discussion of the post, please contact Professor A J Scholl (Chairman) (tel: + 44 (0) 191 374 2355, e-mail: A.J.Scholl@durham.ac.uk or Professor R S Ward (tel: + 44 (0) 191 374 2378 or e-mail: Richard.Ward@durham.ac.uk).

Information about the department may also be found on the World Wide Web: <http://fourier.dur.ac.uk:8000/home.html>

Further details and an application form may be obtained from the Director of Personnel, University of Durham, Old Shire Hall, Durham DH1 3HP to whom applications (5 copies) should be submitted, including the names of three referees (candidates outside the British Isles may submit one copy only). (Tel: +44 (0)191 374 3140, fax: +44 (0)191 374 7253 or e-mail: l.a.cook@durham.ac.uk).

Closing date: Thursday 30 September 1999. Please quote reference CO65.

## SCOTTISH COMPUTATIONAL MATHEMATICS SYMPOSIUM

The eighth annual Scottish Computational Mathematics Symposium will take place on 15th September in the Hume Tower, George Square, Edinburgh. The meeting is 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 speakers are:

- M. Ainsworth (University of Strathclyde) tba;
- J. Blowey (University of Durham)  
Computation of Fourth Order  
Nonlinear Parabolic PDEs;
- S. Chandler-Wilde (Brunel University)  
Integral Equation Methods for  
Scattering by Rough Surfaces;
- J. Sherratt (Heriot-Watt University)  
Computational Questions in  
Mathematical Biology.

The meeting is supported by the LMS and is open to everyone interested. Full details can be found at <http://www.ma.hw.ac.uk/scms>.

## DIFFERENTIAL GEOMETRY WORKSHOP

A workshop on Harmonic Maps and Curvature Properties of Submanifolds, 2, will be held at the University of Leeds from 11 to 14 April 2000. The following people are expected to participate: F. Burstall, T.E. Cecil, M.A. Guest, F. Helein, Y. Ohnita, F. Pedit, U. Pinkall, G. Thorbergsson. This meeting is organized by S. Carter and J.C. Wood. It is supported by a grant from the London Mathematical Society, part of which is to support the participation of research students studying at UK universities. All who are interested are welcome to participate. Further information can be obtained from J.C. Wood, School of Mathematics, University of Leeds, Leeds LS2 9JT (e-mail: [j.c.wood@leeds.ac.uk](mailto:j.c.wood@leeds.ac.uk)). The conference web page is <http://www.amsta.leeds.ac.uk/pure/geometry/leeds2000.html>

## MATHEMATICAL SCIENCES ANNUAL 2000

For the tenth edition of the Annual a different method of distribution is being tried, whereby single copies are being sent directly to individuals and departments instead of multiple copies being sent to departments for further distribution to individuals. However, as long as supplies last, copies can also be obtained by sending me a stamped addressed envelope of at least A5 size (I.M. James, Mathematical Institute, 24-29 St. Giles, Oxford OX1 3LB).

I would appreciate it if departments would let me know, in good time, of any alterations in their particulars required in the next edition. The majority of departments make a voluntary contribution (£10 is suggested) towards the cost of production and distribution, and this is greatly appreciated, but those which do not are listed just the same. Advertisements also help to cover the cost and enable the Annual to continue to be available free of charge. For publishers and others the Annual provides an inexpensive way to inform the UK mathematical scientists of new developments.

I.M. James

## BELFAST FUNCTIONAL ANALYSIS DAY 1999

The Department of Pure Mathematics at Queen's University Belfast will host a one-day meeting on Functional Analysis on Saturday 20 November 1999. This conference is organised by Dr Martin Mathieu and Professor Anthony W. Wickstead and will focus on general aspects of Functional Analysis. It is supported by the London Mathematical Society with a grant to assist graduate students to attend the meeting.

The scientific programme will consist in two one-hour lectures given by Professor Albrecht Boettcher (Chemnitz, Germany) on "C\*-Algebras in Numerical Analysis" as well as contributed 30 minute talks by the participants. Detailed information at <http://www.qub.ac.uk/mp/pmt/news.htm>; to obtain a registration form please send an e-mail ([m.m@qub.ac.uk](mailto:m.m@qub.ac.uk)).



ÉCOLE POLYTECHNIQUE  
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**The Swiss Federal Institute of Technology Lausanne  
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Applied Mathematics**

**in the Department of Mathematics**

The future professors will be mathematicians with an international reputation, proven by published work at the forefront of their fields. Candidates from all areas of applied mathematics are welcome. Specialists in the fields of probability or statistics, differential geometry, and discrete mathematics or optimization are particularly encouraged to apply. A taste and talent for multidisciplinary collaboration would be an asset. Teaching will be an important responsibility; the positions demand strong interest and skills in teaching and the ability to direct PhD/advanced research in mathematics.

The EPFL is an internationally-oriented technical university which offers competitive salaries, substantial start-up packages and excellent research and teaching facilities.

Applications are sought for appointments at the associate or full professor levels. The EPFL strongly encourages women to apply.

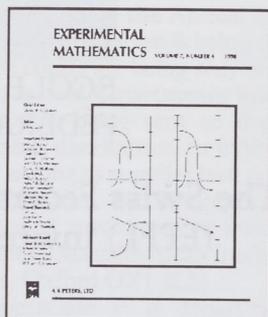
Deadline for registration: **October 29, 1999**. Starting date: upon mutual agreement. Please ask for the application form by writing or faxing to: **Présidence de l'École Polytechnique Fédérale de Lausanne, CE-Ecublens, CH-1015 Lausanne, Suisse, fax nr. +41 21 693 70 84**. For further information, please consult also URL: <http://www.epfl.ch>, <http://dmawww.epfl.ch/>, <http://admwww.epfl.ch/pres/profs.html> or <http://research.epfl.ch/>

# Call for Volunteers!

An Experiment in Mathematical Publishing:

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The *experiment* of publishing a high level journal devoted to a less emphasized aspect of mathematics is in its final stage. We are looking for volunteers to successfully complete the experiment.



### HISTORY OF THE EXPERIMENT:

- May 1991: Inception of the idea over lunch with David Mumford, recognizing the growing need to document mathematical experiments that use innovative ideas.
- June 1991: Assembly of the team, notably David Epstein, Silvio Levy, the advisory board, and an outstanding editorial board.
- 1992: Publication of the first issue.
- 1992–98: Consolidation of reputation, emphasis on selectivity and thorough editing—a much-acclaimed feature of the journal.
- 1998: Establishment of listing in ISI.
- Now: Expansion of the subscription base. To implement this phase, we ask volunteers to provide names and addresses of librarians and other persons responsible for placing institutional subscriptions. We offer interested institutions complimentary copies of *Experimental Mathematics* Volume 7, issues 3 & 4 and will complete Volume 7 upon receipt of a paid institutional subscription starting with Volume 8.

**To participate, write or email Rebecca Howland [rebecca@akpeters.com](mailto:rebecca@akpeters.com)**

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## BOOK REVIEWS

**An Imaginary Tale: The Story of  $\sqrt{-1}$ ,** Paul J. Nahin, Princeton University Press, 1998, 257 pp, £18.95, ISBN 0-691-02798-1.

A couple of years ago I planned a mini-series of lectures on 'Three important numbers:  $\pi$ ,  $e$  and  $i$ '. Preparing the first two was easy: there are several well-known books on  $\pi$  and a classic book by Eli Maor about  $e$ , but there was no available book devoted to  $i$ . This omission has now been amply rectified.

Paul Nahin's book is a delightful romp through the development of imaginary numbers from the time of the Greeks (Heron and Diophantus) up to Cauchy's work on complex function theory in the 19th century. The main story begins in 16th century Italy with the surprising appearance of imaginary numbers in Bombelli's solution of cubic (not quadratic) equations, and continues via the contributions of Descartes and Wallis to Euler's use of  $i$  to link exponential functions and trigonometric ones. The rival claims of Wessel, Argand and others to the first geometrical representation of complex numbers are well documented, as are the bitter debates about the nature of these strange imaginary objects. The author also explains the appearance of complex numbers in a wide variety of applications, ranging from the derivation of Kepler's laws of planetary motion, via number theory and the Riemann hypothesis, to electrical networks and space-time physics. The book concludes with an extended discussion of the work of Cauchy and others in the development of complex analysis, with particular reference to the Cauchy-Riemann equations and to complex integration.

The book is aimed at 'readers with both a general and a scholarly interest in mathematics' and the author claims that it will be accessible to anyone who has completed a US college course in freshman calculus. Even if this may be optimistic for the later chapters, the book is undoubtedly an entertaining introduction to the develop-

ment of some fascinating mathematical ideas and can be strongly recommended. Whether you are studying complex numbers for the first time or about to teach a course in classical complex analysis, you will find much to interest you here.

Robin J. Wilson  
The Open University

**The Eightfold Way: The Beauty of Klein's Quartic Curve,** by Silvio Levy (Ed.), Cambridge University Press, 1999, 331 pp, £35.00, US\$49.95, ISBN 0-521-66066-1.

"Mathematics is full of amazing beauty, yet the beauty of mathematics is far removed from most people's everyday experience." So begins Thurston's introductory essay to this fascinating book. 'Klein's quartic' in the title refers to the complex algebraic curve  $x^3y + y^3z + z^3x = 0$  and in particular its associated Riemann surface. This is a surface of genus 3 that has  $PSL(2,7)$ , of order 168, as its conformal automorphism group. This group has order 168 and thus by Hurwitz's  $84(g-1)$  bound, is the most symmetric of all genus 3 Riemann surfaces. (It can be shown that it is the only surface of genus 3 with this property.) As  $PSL(2,7)$  is not a rotation group in 3-dimensional space, we cannot build a model of this surface where we can visualise all these symmetries and the mathematician/sculptor Helaman Ferguson has built a sculpture that encompasses the symmetry and beauty of Klein's surface. This is permanently installed at the Mathematical Sciences Research Institute at Berkeley. To commemorate its unveiling in 1993, Thurston wrote a short note explaining the surface to a wider audience. Besides this note, the book contains, for the first time, an English translation of Klein's original article of 1879, *Über die Transformation siebenter Ordnung der elliptischen Funktionen* (On the order-seven transformation of elliptic functions.) There are also seven very interesting survey and research articles displaying the importance

of Klein's surface to other areas of Mathematics. *The Geometry of Klein's Riemann Surface* by H. Karcher and M. Weber discusses the differential and complex geometric properties of the surface besides many similar surfaces such as the Fermat quartic. *The Klein Quartic in Number Theory* by N.D. Elkies highlights some of the properties of the surface of importance to number-theorists. The connections with number theory was already apparent to Klein who noted that the surface is the modular surface  $X(7)$ . More remarkably, it is shown in Elkies' article that the Klein quartic leads to a solution (due to Kenku) of the class number one problem and a solution of Fermat's Last Theorem in the case  $n = 7$ . *Hurwitz Groups and Surfaces* by A.M. Macbeath, looks at other surfaces for which the  $84(g-1)$  bound is attained. This is a very interesting group-theoretic problem. It was shown by Macbeath in 1961 that this bound is attained for infinitely many values of  $g$  but we still do not know what these values are. *From the History of a Simple Group* by Jeremy Gray is a reprinting of an article in *The Mathematical Intelligencer* of 1982 which explains much of Klein's original motivation from 19th century Algebraic Geometry. *Eightfold Way: The Sculpture* is an illustrated essay by the Sculptor Helaman Ferguson and Claire Ferguson, explaining some of the philosophical and artistic problems concerning the creation of the sculpture. The final two articles, both by Allan Adler, *Invariants of  $SL_2(\mathbb{F}_q)$ .Aut( $\mathbb{F}_q$ ) acting on  $\mathbb{C}^*$  for  $q = 2n+1$*  and *Hirzebruch's curves  $F_1, F_2, F_{14}, F_{28}$  for  $Q(\sqrt{7})$* , explore other curves related to the Klein quartic.

In 1884 Klein published his famous book on the Icosahedron. Most people can appreciate the visual beauty of the icosahedron, but to a mathematician this beauty is much deeper. For a start, its rotation group is the first non-cyclic simple group. In his book Klein used the icosahedron to unify many aspects of mathematics important in the 19th century. In some ways the present book does the same for several topics of interest to 20th century mathematicians, this time using Klein's surface whose

rotation group is the second smallest non-cyclic simple group. Ferguson's sculpture should enable the non-mathematician to appreciate the beauty of the Klein surface, but mathematicians have the privilege to be able to explore this beauty at a deeper level. This remarkable book will help them to do this.

David Singerman  
University of Southampton

**Graph Theory as I Have Known It**, by W.T. Tutte, FRS, FRSC, Clarendon Press, Oxford, 1998, 156 pp, £27.50, ISBN 0-19-850251-6.

In 1935 a 'gang of four' undergraduates, members of the Trinity College Mathematical Society at Cambridge, started to discuss a number of mathematical problems. Apart from Bill Tutte himself, the other members of this gang, or team, of four were Leonard Brooks, Cedric Smith and Arthur Stone. These problems stimulated all four, and as they discovered that these problems each had a strong link in one way or another to graph theory, they were all leading to prove well-known theorems in graph theory. Indeed Tutte himself became a Distinguished Professor in Waterloo, Canada, specializing in Graph Theory, and, according to some of his fans, deserves the title of 'Father of Modern Graph Theory'.

'Graph Theory as I have known it' gives a light-hearted, readable, interesting and personal account of many of the discoveries made by Tutte and other members of the team. It is quite remarkable how much Tutte attributes to others, particularly Smith. It always seems to be Smith who places the problem in an algebraic setting. For example, Tutte describes how in Smith's hand first the edges of cubic graphs became vertices, and the vertices became sets of three edges, then edges became distinguished points in a vector space mod 2, the vertices persisting as triads of such points summing to zero, but eventually the vertices disappeared and only linear relations, not necessary of triads, remained.

The first chapter 'Squaring the Square' is concerned with the problem the Team of Four became interested in of showing that no square can be dissected into smaller squares, all of unequal size. Stone noticed that this assertion is implicit in one of the problems in the book 'The Canterbury puzzles' by H.E. Dudeney. Later they discovered that the assertion was a conjecture of Lusin, but it was only a conjecture. Their initial step in trying to investigate the problem was to try to search for perfect rectangles, that is rectangles that can be dissected into squares all of unequal size. They became quite adept at constructing such perfect rectangles, the first being discovered by Stone. In trying to make diagrammatic representations of perfect rectangles, they drew graphs and this led to the discovery that a squared rectangle was equivalent to an electrical network of unit resistances. The graphs they drew led them into a study of planarity and planar duality, and also into 3-connectedness. The connection with electrical networks implies a connection with Kirchhoff's Laws, and to the matrix representations of these. All this understanding lead eventually to a disproof of Lusin's conjecture and to a theoretical method for constructing perfect squares, published in 1940. Unfortunately they were pipped to the post, the first perfect square appearing in a paper by R.P. Sprague in 1939, and it was constructed by a more empirical method.

This chapter gives a good flavour of all twelve chapters in the book. It is very interesting to see how some really clever people went about studying mathematics. What fun they must have had! It is also interesting to see the way that Tutte thinks about graph theory. It is a style of thought rather different from that of most graph theorists today. For example Tutte explains his original proof of his 1-factor theorem. This original proof involves Pfaffians, and is strikingly different from the fairly straightforward proof of this important result included in most textbooks on graph theory today.

Themes that recur throughout the book are planar graphs, Tait colourings, chromatic polynomials, links with algebraic topology; and throughout there is a penchant for the use of clever algebraic tools.

I suppose it would have altered the style and flow of the book too much, but I would have been interested to learn of Tutte's experiences at Bletchley Park in the war.

Tutte's style of writing is inimitable and entertaining. The book is in no way a textbook on graph theory, but it does give many fascinating insights into the mind of a unique, gentle, very gifted, and highly influential mathematician. Anyone reading the book will learn a great deal of high-brow mathematics; the learning will be easy, as the book is written with the lightest of touches. 'Graph Theory as I have known it' is to be recommended as a very good, very entertaining, very informative read.

A.J.W. Hilton  
University of Reading

### USE OF CALCULATORS IN UNIVERSITY MATHEMATICS EXAMINATIONS

We at Leeds University have recently introduced the rule that students may only use basic scientific calculators in Mathematics examinations (in a few cases any use of calculators is forbidden) thus ruling out the use of graphical and programmable calculators.

I know that similar rules apply in some other universities. I would be grateful to receive information which would enable me to summarize the policy on calculators in Mathematics departments in British universities. Details to: Dr Alan Slomson, Director of Undergraduate Studies, School of Mathematics, The University of Leeds, Leeds LS2 9JT, e-mail: A.Slomson@Leeds.ac.uk, tel: 0113 233 5186 (answerphone), fax: 0113 233 5145.

A. Slomson

# ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

## Scientific Steering Committee

The current membership of the Scientific Steering Committee, and the terms of appointment of the present members, are as set out below:

		Nominating Body	End of Service
Professor N.J. Hitchin FRS (Chairman)	Oxford	LMS	31/12/01
Professor H.K. Moffatt FRS (Director)			
Professor R.M. Anderson FRS	Oxford		31/12/00
Professor Sir Michael Berry FRS	Bristol		31/12/99
Professor R.H. Dijkgraaf	Amsterdam		31/12/02
Professor C.M. Elliott	Sussex	EPSRC	31/12/02
Professor W.T. Gowers FRS	Cambridge		31/12/02
Professor A. Newell	Warwick		31/12/00
Professor E.G. Rees	Edinburgh		21/12/02
Professor B.D. Ripley	Oxford	EPSRC	31/12/99
Professor A.F.M. Smith	Imperial	EPSRC	31/12/00
Professor J.F. Toland FRS	Bath	LMS	31/12/99
Professor S. White FRS	Munich	PPARC	31/12/01
Professor D. Zagier	Bonn		31/12/01

As indicated, three members are nominated by EPSRC, one by PPARC and two by LMS. The remainder are appointed by the General Board of the University of Cambridge after consultation with the Royal Society, the Royal Society of Edinburgh, the Royal Statistical Society, the Institute of Physics, the Fellowship of Engineering, the Institute of Mathematics and its Applications and the Edinburgh Mathematical Society.

Three members will retire on 31 December 1999, and the process of consultation regarding new appointments (for 4 years from January 2000) is now underway. It is desirable to maintain a broad representation both over the full range of the mathematical sciences, and over UK Universities. Members of the UK Mathematical Sciences Community may wish to make their views known, and are invited to do so either through any of the above bodies that are consulted, or directly to the Director of the Institute (e-mail: hkm2@newton.cam.ac.uk).

## Programme Announcements

On the advice of the Scientific Steering Committee, the following future programmes have recently been confirmed:

**Nonlinear and Partial Differential Equations** January to June 2001 *Organisers: H Brezis (Paris), N Dancer (Sydney), J F Toland (Bath), N S Trudinger (Australian National University)*

**Managing Uncertainty - New Analysis Tools for Insurance, Economics and Finance** 23 July to 10 August 2001 *Organisers: P Embrechts (ETH Zurich), D Goodman (British Antarctic Survey), W J Fitzgerald (Cambridge), R L Smith (North Carolina)*

**M-Theory** January to June 2002 *Organisers: R H Dijkgraaf (Amsterdam), M R Douglas (Rutgers), J P Gauntlett (QMW), C M Hull (QMW)*

A complete list of the Institute's programmes confirmed to 2002, with descriptions where available, can be found at:

[http://www.newton.cam.ac.uk/programmes/future\\_progs.html](http://www.newton.cam.ac.uk/programmes/future_progs.html)

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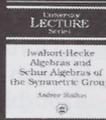
**Admissible Invariant Distributions on Reductive  $p$ -adic Groups**

**Harish-Chandra**

Notes by *Stephen DeBacker* and *Paul J. Sally, Jr*

This book is a complete account of Harish-Chandra's original lectures on this subject, including his extension and proof of Howe's Theorem. In addition to the original Harish-Chandra notes, DeBacker and Sally provide a nice summary of developments in this area of mathematics since the lectures were originally delivered. In particular, they discuss quantitative results related to the local character expansion.

99pp, ULECT/16, 0-8218-2025-7 Oct 1999 **£15.00**



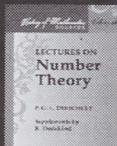
AMERICAN MATHEMATICAL SOCIETY

**Iwahori-Hecke Algebras and Schur Algebras of the Symmetric Group**

**Andrew Mathas, University of Sidney**

This volume is a fully self-contained introduction to the modular representation theory of the Iwahori-Hecke algebras of the symmetric groups and of the  $q$ -Schur algebras. The primary goal of the book is to classify the blocks and the simple modules of both algebras. The final chapter contains a survey of recent advances and open problems.

211pp, ULECT/15, 0-8218-1926-7 Oct 1999 **£18.00**



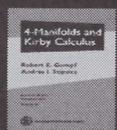
AMERICAN MATHEMATICAL SOCIETY

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275pp, HMATH-STILLWELL2, 0-8218-2017-6 Oct 1999 **£35.50**



AMERICAN MATHEMATICAL SOCIETY

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**Robert E. Gompf, University of Texas, Austin**  
**Andras I. Stipsicz, ELTE, TTK, Budapest**

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## BRITISH LOGIC COLLOQUIUM Second Announcement

The 1999 meeting of the British Logic Colloquium will be held from 23 to 25 September at the University of Wales conference centre, Gregynog. The meeting will include a celebration of Roger Hindley's contributions to logic, on the occasion of his retirement from the Department of Mathematics at the University of Wales Swansea. In addition, there will be lectures covering a wide variety of areas of mathematical and philosophical logic as well as the history of logic. The provisional programme is:

Thursday 23 September

- Robin Milner (Cambridge) What is the Logic of Communication?
- Giuseppe Longo (CNRS and ENS, Paris) Prototype Proofs and Genericity in Type Theories
- Roger Hindley (Swansea) Curry's Last Problem, Imitating Lambda-beta-reduction in Combinatory Logic
- BLC Annual General Meeting.

Friday 24 September

- Henk Barendregt (Nijmegen) The Perpendicular Lines Lemma for Lambda Terms and Boehm Trees
- Mariangiola Dezani (Turin) Intersection Types and Properties of Lambda Terms
- Jonathan Seldin (Concordia) Roger Hindley's Work on lambda-calculus and Combinatory Logic
- Ivor Grattan-Guinness (Middlesex) The Reception of 'Principia Mathematica' in Britain and Abroad, 1913-1935
- David Miller (Warwick) Some Neglected Work in General Metamathematics
- Mirna Dzamonja (East Anglia) Cardinal Spectra
- Banquet in honour of Roger Hindley

Saturday, 25 September

- Richard Kaye (Birmingham) A Nonstandard Approach to Baire Category
- Jens Blanck (Uppsala/Swansea) Computations on Topological Algebras

The meeting will take place in the con-

ference centre of the University of Wales at Gregynog. Gregynog is a large Victorian country house in mid-Wales, standing in 750 acres of wooded parkland. It is located five miles north of Newtown, Powys, with a regular train link to Birmingham (taking approximately 1h 45m). All participants will be offered rooms in the house. The cost of participation, including registration, two days lodging at Gregynog with full board and the conference banquet is as follows: non-BLC members £140, BLC members £120, students £70. As the number of subsidised student places is limited, early registration is advised. To register contact Jill Edwards, Department of Computer Science, University of Wales Swansea, Singleton Park, Swansea SA2 8PP. Enquiries may be addressed to the organisers: Anuj Dawar (anuj.dawar@cl.cam.ac.uk) or John Tucker (j.v.tucker@swansea.ac.uk). See also the web site (<http://www.cl.cam.ac.uk/~ad260/blc99.html>). The meeting is generously supported by grants from the London Mathematical Society and the British Logic Colloquium.

Interested in  
**Secondary Mathematics  
Teaching**  
as an alternative career?

3-session 'taster' course  
October/November 1999  
including one day  
school observation  
fee £25.00

Details: Lyn Griffiths  
0171-612 6589  
e-mail: [l.griffiths@ioe.ac.uk](mailto:l.griffiths@ioe.ac.uk)

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## BMC 2000, LEEDS

The 52nd British Mathematical Colloquium will be held in the University of Leeds from 17-20 April 2000.

The plenary speakers at this meeting will be Simon Donaldson (Imperial College), Vaughan Jones (Berkeley), Harvey Friedman (Ohio), and Jens Jantzen (Aarhus). Sir Michael Atiyah will give a special lecture reviewing mathematics at the end of the millenium. There will also be 14 main speakers, mostly based in the UK.

There will be special sessions on

- Harmonic maps and minimal surfaces
- Operator algebras

Splinter groups on

- Number theory
- Mathematical Logic
- Algebraic Topology
- Mathematical Education
- Functional Analysis
- Algebra
- Integrable Systems

There are several satellite meetings. These include: 'Harmonic maps and curvature properties of submanifolds' (in Leeds, 11-14 April); 'Model theory' (in Leeds, 17 April); 'Mathematical methods of regular dynamics - dedicated to the 150th anniversary of Sonja Kowalevski' (in Leeds, 14-17 April); 'British topology meeting' (in Sheffield, 16-17 April). The annual meeting of HoDoMs will take place in Leeds at the same time as the BMC.

The organisers are H.G. Dales and H.D. Macpherson (Leeds). Registration forms will be available in early 2000; they will be circulated with this *Newsletter*, and sent to all UK Departments of Mathematics. They can also be obtained from Dr H.D. Macpherson at Leeds.

Accommodation is available on the campus of the University. For full details of the programme, see the later announcements and web site:

<http://www.amsta.leeds.ac.uk/bmc/>

The BMC is sponsored by the London Mathematical Society, and grants are available to support graduate students.

## SUPPORTING STUDENT LEARNING

The Content Subgroup of Teaching and Learning in Undergraduate Mathematics (TaLUM), a Committee of the Mathematical Association, undertook in 1998 a survey of methods used to support teaching in mathematics in UK universities. The survey was conducted electronically.

There was information concerning 202 modules, from 73 colleagues in 38 institutions. These modules were distributed across all years and included both mainstream mathematics (all branches) and service teaching.

Although use of the Internet was relatively rare at the time of this survey (24 modules in 14 institutions), our own experiences lead us to suspect that this may now have increased significantly. On the other hand, the traditional small-group tutorial appears to be becoming an endangered species, being mentioned in a fifth of modules across two-thirds of the institutions in the survey.

Here are some of the different practices mentioned by correspondents:

- Providing solutions sheets for Examples Classes so that the lecturer can just concentrate on the more difficult examples.
- Using a CALMAT package enabling the lecturer to minimise the likelihood of plagiarism within the coursework part of the assessment and encouraging students to put in the time.
- 'Foreshadowing' - using problem sessions partly to do problems resembling the following week's homework.
- 'Homework rescue' - using a problem session for students struggling to complete the work.
- Asking students to work in pairs on selected problems and to hand in a joint solution sheet.
- Using postgraduates to give workshops or tutorials, having the benefit that students often find it easier to ask

questions.

- Using second years to help with a first year students' problems class.
- Using short fortnightly tests rather than weekly marked work, giving rapid feedback to the students and helping to maintain the students' participation in the module.

There was much variety in the ways handouts were used for lecture material:

- Full printed lecture notes;
- Skeleton lecture notes with gaps for students to complete in the lecture;
- Basic notes giving definitions, theorems and proofs;
- Outline lecture notes;
- Summary of the lecture notes (sometimes weekly);
- Material not covered by texts;
- Booklet of remedial work or pre-requisite material;
- Supplementary material (which may not be strictly in course);
- Condensed information such as formulae sheets, pictures, graphs, diagrams;
- Examination terminology and hints on technique (study skills generally).

Notes were sold, given out free or put on the Web.

Using the Internet:

- Providing model solutions, past exam papers, course lecture notes, problem sheets.
- Setting up a group e-mail list for a course to enable informal discussions between students and for the lecturer to use as a teaching medium.
- Providing access to data sets, e.g. Official Statistics.
- Providing notes on various aspects of LaTeX, microemacs on departmental homepage.
- Encouraging more interaction with the lecturer by responding to quick queries by e-mail.

The following other points were mentioned:

- Breaks during lectures for students to do problems in pairs.
- Student presentations, students presenting work in pairs, practice sessions (getting feedback from other students).
- Students designing a poster to illustrate part of the course.
- Using mathematical videos.
- Following a module by revision lectures taken by a postgraduate.
- Lecturing a module entirely on one day each week (5-hour multi-activity)
- Student self-study

This is a shortened version of a report prepared by the TaLUM Content Group, whose members are: Johnston Anderson (Nottingham), Keith Austin (Sheffield) [convener], Tony Barnard (King's, London), Amanda Chetwynd (Lancaster), Peter Kahn (Liverpool Hope).

### THE GRADUATE TEACHER PROGRAMME

LMS members will hardly need reminding that there is a serious shortage of qualified mathematics teachers in UK schools. A new scheme has been devised to enable graduates to earn a salary while training, and you might draw it to the attention of anyone you know who is thinking of becoming a teacher but cannot afford to spend a further year as a student.

To be eligible, applicants must have a degree in mathematics or (preferably physical) science and GCSE Grade C or above, or the equivalent, in Mathematics and English. They must also be aged 24 or above, because the scheme is aimed at mature students, postgraduates, and graduates who have been working for some time and are looking for a change of career.

All applicants will be interviewed, and those who are assessed as suitable for teaching will attend a one-week sampler course including a school placement. TimePlan, a teacher supply agency, will then seek to match each applicant with a suitable vacancy in a school. Once accepted by a school, the candidate will be put

forward for the Graduate Teacher Programme (GTP), an individual training programme. This will normally last a year, but may be shortened for those with previous teaching experience. At the end of the training, each candidate will be independently assessed and, if successful, will gain Qualified Teacher Status.

The Teacher Training Agency will cover the cost of the selection and placement service, and the school based training. There is also an incentive payment to the school. To find out more about this scheme, contact Timeplan: (tel: 0870 730 8000, e-mail: gtp@timeplan.co.uk).

### ERGODIC THEORY AND SET THEORY

The one-day conference on Ergodic Theory and Set Theory, the fourth in the series Set Theory and its Neighbours, will take place on Wednesday 15th September 1999 at the London Mathematical Society building, De Morgan House, 57-58 Russell Square, London WC1. The meeting will start at 11 am.

The speakers at the meeting are:

- Manfred Einsiedler (Vienna, Austria)
- Matt Foreman (UC Irvine, USA)
- Menachem Magidor (Jerusalem, Israel) (to be confirmed)
- Boban Velickovic (Paris VII, France) (to be confirmed)
- Tom Ward (UEA)
- Benjamin Weiss (Jerusalem, Israel)

More information, including titles, abstracts and slides/preprints (as they are confirmed), and sketches of some recent interactions between ergodic theory and set theory are available at the meetings' web-page: [http://www.ucl.ac.uk/~ucah\\_cjm/stn.html](http://www.ucl.ac.uk/~ucah_cjm/stn.html). Alternatively send e-mail to Charles Morgan ([charles.morgan@ucl.ac.uk](mailto:charles.morgan@ucl.ac.uk)).

It is hoped to keep the meeting fairly relaxed, allowing plenty of opportunity for informal discussion. Participation is welcomed and encouraged. The organisers are very grateful to the LMS for allowing them to use De Morgan House as a venue and for their financial support.

THE INSTITUTE OF MATHEMATICS AND ITS APPLICATIONS



**FORTHCOMING CONFERENCES**

**SEVENTH CRYPTOGRAPHY AND CODING**

*The Royal Agricultural College, Cirencester 20 - 22 December 1999*

**THIRD MATHEMATICAL EDUCATION OF ENGINEERS**

*Loughborough University 26 - 28 April 2000*

**COMPUTATIONAL CHALLENGES FOR THE MILLENNIUM**

*Cambridge 13-14 July 2000*

**NINTH MATHEMATICS OF SURFACES**

*Cambridge 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 11 - 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*

**FIFTH MATHEMATICS IN SIGNAL PROCESSING**

*University of Warwick 18 - 21 December 2000*

**FOURTH MATHEMATICAL MODELS OF MAINTENANCE**

*University of Salford 9-11 April 2001*

**THIRD SPATIAL PATTERNS IN PERMEABLE ROCKS**

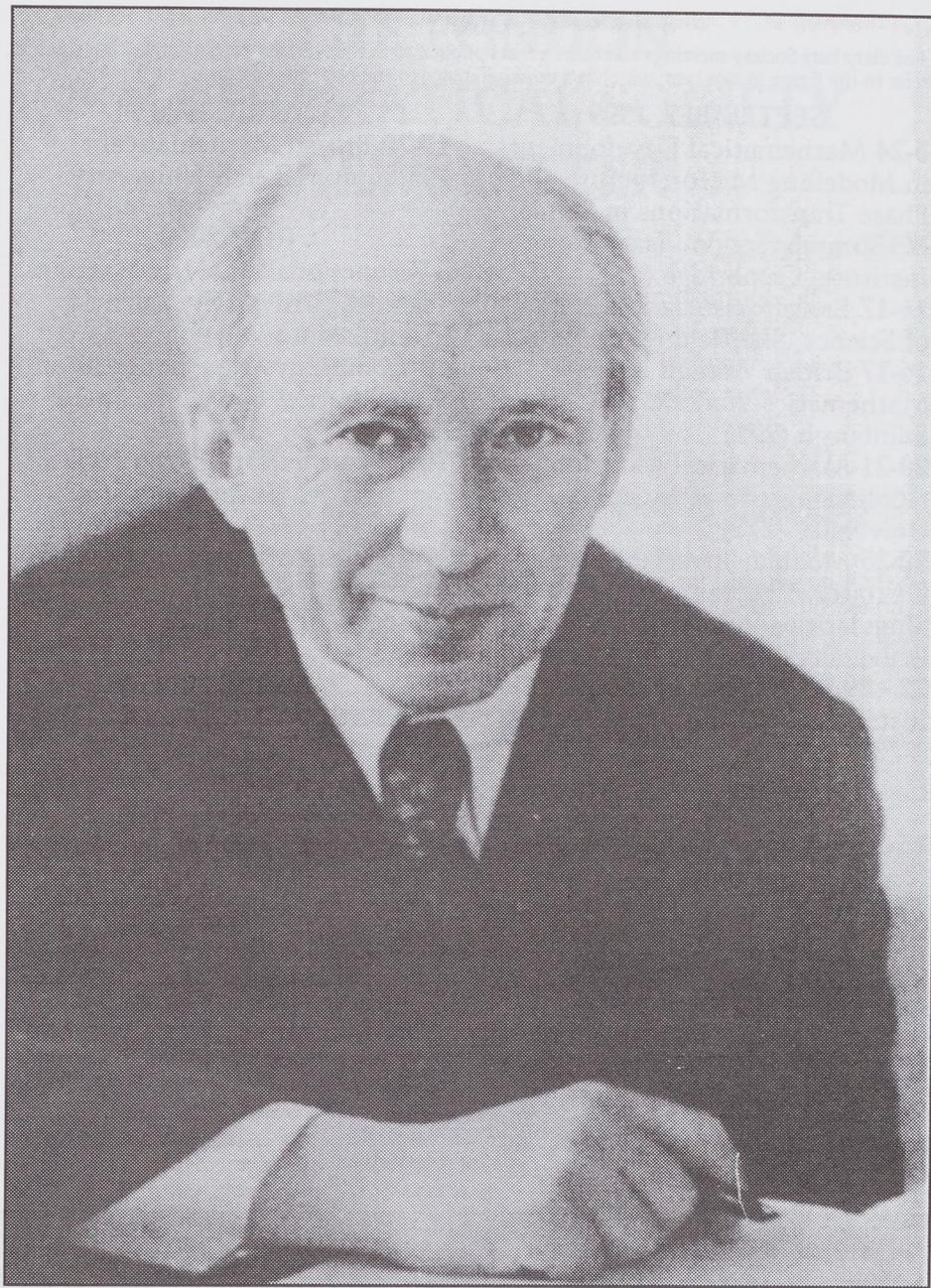
*Churchill College, Cambridge 27 - 29 March 2000*

✂

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**Honorary Member 1967**

## DIARY

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

### SEPTEMBER 1999

- 6-24** Mathematical Developments in Modelling Microstructure and Phase Transformations in Solids, EC Summer School, Isaac Newton Institute, Cambridge (271)  
**11-17** British Association Festival of Science, Sheffield (270)  
**16-17** British Women in Mathematics Workshop, ICMS, Edinburgh (271)  
**20-21** Mathematical Modelling of Nonlinear Systems Meeting, Leeds University (273)  
**20-25** Modular Invariants, Operator Algebras and Quotient Singularities Workshop, Warwick University (270)  
**22 - 29** Functional Analysis Instructional Conference, Sicily (272)

### OCTOBER 1999

- 15-16** Two-day LMS Meeting, New Applications of Twistor Theory, London

### NOVEMBER 1999

- 2 - 5** Hilbert's 10th Problem, Relations with Arithmetic and Algebraic Geometry Workshop, Gent University, Belgium (271)  
**19** LMS Meeting - Annual General Meeting

### APRIL 2000

- 17-20** British Mathematical Colloquium, Leeds University

### JULY 2000

- 3-7** Functional Analysis Meeting, Technical University, Valencia, Spain (265)  
**10-14** 3rd European Congress of Mathematics, Barcelona, Spain (272)  
**10-14** Free Surface Flows IUTAM Symposium, Birmingham University (272)  
**17-22** International Congress of Mathematical Physics, Imperial College, London (257)

### APRIL 2001

- 9-12** British Mathematical Colloquium, Glasgow 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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