# THE LONDON MATHEMATICAL SOCIETY NEWSLETTER 

## FORTHCOMING SOCIETY MEETINGS

Friday 15 October 1993, Burlington House Symplectic Geometry and Hamiltonian Dynamics S. Alpern, H. Hofer, D. Salamon, C. Viterbo<br>Friday 19 November 1993, Burlington House D.G. Crighton, M.V. Berry

## LMS INVITED LECTURES - 1994

The London Mathematical Society annually organises a series of 10 expository lectures by an outstanding mathematician, given over the space of one week. The lecturer for 1994 will be a mathematical physicist, Dr. John Madore, CNRS France, who will speak on Matrix Geometry and Physics. The lectures will take place during the week of 21 March - 25 March 1994 at King's College, London. The aim of the lectures will be to provide an introduction to non-commutative differential geometry
within the context of matrix algebra and to demonstrate how it can be applied to gauge theory and other interesting physical field theories. The lectures will be directed towards advanced post-graduates and research workers in both pure mathematics and mathematical physics.

Further details will be published in a subsequent issue of the Newsletter. Enquiries may be addressed to Dr. David Robinson, King's College, London, tel. 071-8732221, email: d.robinson@uk.ac.kcl.cc.oak.

## PRESIDENT-DESIGNATE

In accordance with By-Law I,4, the Council of the Society is very pleased to announce that Professor N. J. Hitchin, FRS, is the next President-Designate of the Society: as members will note from the item entitled 'Nominations for Council' elsewhere in this Newsletter, Council has nominated Professor

Hitchin for election to Council as Member-at-Large in November 1993, and the intention is that he will be nominated by Council for election as President one year later.

R.Y.Sharp<br>Council and General Secretary

## 1993 LIST OF MEMBERS

The 1993 List of Members should accompany this Newsletter. My thanks to all members who returned their forms. As far as possible each individual member's entry contains precisely the information supplied by the member. Some alterations have, however, been necessary to achieve the consistent format agreed by Council, and others have been forced by space limitations. If any
member finds an error in their entry which is not attributable to these causes, or if there are any subsequent changes to the particulars (such as extra degrees gained, or change of address) please inform me, as soon as possible, either in writing, or by email: lms@uk.ac.kcl.cc.oak.
S.M. Oakes

Administrator

## NOMINATIONS FOR COUNCIL

Members of the Society are reminded that nominations of members for election to the Council may be made by writing to the Council and General Secretary (Professor R. Y. Sharp, Department of Pure Mathematics, University of Sheffield, Hicks Building, Sheffield S3 7RH). Such nominations must arrive before noon on 01 September 1993, must be made in accordance with the Charter, Statutes and By-Laws of the Society, must state the Office or term of Membership-at-Large to which nomination is made, and must be signed by the member nominated, by the nominator and by a seconder who is also a member of the Society. The sample nomination form at the foot of this fotice, which could be photocopied or imitated, may help members of the Society.

All valid nominations received are added to those made by the Council, and circulated to the Society on a Ballot Paper which is used for the Council Elections at the Annual General Meeting in November. It should be noted that Council will make just enough nominations to fill the expected vacancies, so that, if this notice leads to no additional nomination, then the 1993 Council Elections will, like those of the last five years, be essentially a formality.

Council's decisions about its nominations are indicated in the following list.

## COUNCIL'S NOMINATIONS FOR THE 1993 ELECTIONS

## OFFICERS (one-year terms)

## President

J. R. Ringrose

Vice-Presidents
R. A. Bailey
A. O. Morris

Council and General Secretary
R. Y. Sharp

Publications Secretary
D. A. Brannan

## Treasurer

J. D. M. Wright

Meetings and Membership Secretary
D. J. Collins

Librarian
J. A. Erdos

MEMBERS-AT-LARGE (two-year terms)

## *K. A. Brown

MEMBERS-AT-LARGE (one-year terms)
D. G. Crighton
*P. T. Saunders
W. A. Hodges
N. J. Hitchin
J. C. Robson
N. J. Young

Notes. (i) Members are reminded that W. A. Hodges is Chairman of the Society's Computer Science Committee and that J. C. Robson is Chairman of the Society's Education Committee.
(ii) The persons whose names are marked with an asterisk are not on the retiring Council.
(iii) Members should note that the following five Members-at-Large of Council efected for two-year terms in November 1992 will have one remaining year to serve: F. H. J. Cornish, A. Gardiner, H. R. Morton, M. J. Taylor, C. T. C. Wall.

R. Y. Sharp<br>Council and General Secretary

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## LMS 1993 PRIZES

The Polya Prize is awarded to D. Rees for his many deep contributions of fundamental significance in commutative Noetherian ring theory and local algebra.
The Senior Whitehead Prize is awarded to B. J. Birch for his work in number theory, and in particular for his outstanding contributions to the arithmetic of elliptic curves.
The Junior Berwick Prize is awarded to T . D. Wooley for his paper 'On simultaneous
additive equations I', Proc. London Math. Soc. (3) 63 (1991) 1- 34.
Junior Whitehead Prizes are awarded to D. J. Benson for his work in the representation theory of finite groups and in cohomology theory, to P. B. Kronheimer for his work in differential geometry and differential topology, and to D. G. Vassiliev for his work in the spectral analysis of differential operators.

## DEPARTMENTAL NEWS

It is intended that 'Departmental News' will be a regular item in the Newsletter, recording appointments, promotions, retirements and other matters of general interest to the mathematical community. The Editors will be most grateful to receive such information from Departments.
School of Mathematical Sciences, University of Bath

The University has recently appointed Dr. D. Draper (UCLA and Rand) and Dr. H. Logemann (Bremen) to Lectureships in the School of Mathematical Sciences.

Professor Silverman is moving on to Bristol, and Dr. Jennison has been appointed Head of the Statistics Group in the School.

## DAMTP, University of Cambridge

M.E. McIntyre, FRS MAE has been appointed Professor of Atmospheric Dynamics from 1 October 1993, and M.R.E. Proctor has been appointed Reader in Astrophysical Fluid Dynamics from 1 October 1993. Professor M.B. Green, FRS has been appointed the John Humphrey Plummer Professor of Theoretical Physics from 1 July 1993.

## EDUCATION COMMITTEE - GRANTS

The London Mathematical Society Education Committee would welcome requests for support 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 T. Porter, School of Mathematics, University College of North Wales, Dean Street, Bangor LL57 1UT. Informal contact may be made via MAS013@uk.ac.bangor.vax, but it would make my job easier if I can receive the 'formal' application via ordinary mail.
T. Porter

Secretary, LMS Education Committee

## CAMPAIGNS FOR HUMAN RIGHTS

Members of the Society might like to be informed that the latest in the series of Campaigns for Human Rights, directed by Professor Israel Halperin (Department of Mathematics, University of Toronto, Toronto, Ontario, Canada M5S 1A1) is
an Anti-Apartheid Campaign, and that Professor Halperin, to whom requests for further information should be directed, would welcome expressions of support from individuals.

## THIRD INTERNATIONAL WIGNER SYMPOSIUM

The Third International Wigner Symposium will be held at Christ Church, Oxford, from the evening of Sunday, 5th September to the morning of Saturday, 11th September, 1993. Details may be obtained by sending the message GET WIGSYM INFO to LISTRAL@IB.RL.AC.UK.

This symposium is a residential conference and priority of registration will be given to those who opt to reside in Christ Church. This is a rare opportunity for people whose work overlaps in any way that of E P Wigner.

The Joint Organizers are Dr L Laurence Boyle, University Chemical Laboratory, Canterbury, Kent CT2 7NH, telephone: 0227764000 ext 3584, fax: 0227475475 , email: LLB@ukc.ac.uk and Professor Allan I Solomon, Faculty of Mathematics, The Open University, Walton Hall, Milton Keynes, Bedfordshire MK7 6AA, telephone: 0908 652326, fax: 0908 653744, email: a.i.solomon@open.ac.uk. The Local Secretary is: Dr Maia N Angelova, Somerville College, Woodstock Road, Oxford OX2 6HD, telephone: 0865 270659, fax: 0865 270616; email: angelova@vax.ox.ac.uk.. The Honorary Chairman is Professor Eugene Wigner (Princeton University) and the Patron is Professor Sir Roger Elliott (Oxford University).

The members of the International Advisory Committee are: L C Biedenharn (University of Texas at Austin) on Quantum Groups, J L Birman (City College of the City University, New York) on Condensed Matter Physics, H-D Doebner (University of Clausthal) on Geometric Quantization, G. Emch (University of Florida) on Foundations of Quantum Mechanics, F Iachello (Yale University) on Nuclear Physics, B R Judd (The Johns Hopkins University, Baltimore) on Atomic and Molecular Physics, V G Kadyshevsky (Joint Institute for Nuclear Research, Dubna) on Elementary Particle Physics, Y S Kim (University of Maryland, College Park) on Lorentz Group and Extended Particles, P L Knight (Imperial College, London) on Wigner Functions and Quantum Optics, M Moshinsky (Universidad Nacional Autonoma de Mexico) on Group-

Theoretical Methods, N Sanchez (Observatoire de Paris) on Gravity and General Relativity.

The members of the International Steering Committee are: D Han (Goddard Space Flight Center of NASA), H-D Doebner (University of Clausthal), Y S Kim (University of Maryland), F Schroeck (Florida Atlantic University), W W Zachary (Howard University, Washington, D.C.).

The first and second meetings of this series of symposia took place at College Park, Maryland (U.S.A.) in 1988 and at Goslar (Germany) in 1991 respectively.

Provided that the topic falls within the general definition of a Wigner Symposium, i.e. is in a field in which Wigner made a major contribution, the organisers will accept one contribution per participant until either the conference is deemed to be full or the deadline for submission of abstracts passes, whichever is the earlier. After this date the organisers will select on the basis of the abstracts received and any other evidence of ability to present an interesting and stimulating lecture and in consultation with the Advisory Committee when appropriate, those contributions which are to be presented as short talks: the remainder will be presented as posters. Poster communications and short oral communications will have exactly the same allowance of space in the published proceedings which will be refereed. Details for the preparation and submission of abstracts and the information required for registration are available in the LISTRAL database.

This Symposium is in receipt of grants from the Commission of the European Communities, the Royal Society of London, the London Mathematical Society, the British Tourist Authority and contributions from the University of Maryland at College Park and the Goddard Space Flight Center of the United States National Aeronautics and Space Administration. It is grateful to the United Kingdom Science and Engineering Research Council for the free use of the LISTRAL automatic mailer.

## THE CAYLEY/MAGMA CONFERENCE ON COMPUTATIONAL ALGEBRA

An instructional conference on Computational Algebra and the new MAGMA system for Algebra and Number Theory will be held at Queen Mary and Westfield College, London, 23 to 27 August, 1993 (supported by a grant from the London Mathematical Society).

Each day will be devoted to one of the major areas of computational algebra with invited lectures, contributed talks and workshop sessions on the corresponding MAGMA features. In each area, leading researchers have been invited to survey the key algorithms and discuss the most recent advances. Particular stress will be placed on the growing interactions between the various branches of Computational Algebra.

The conference marks the international launch of MAGMA, designed and developed (in Sydney) to provide a unified environment - for efficient computation in groups, rings, fields and modules. This system extends the ideas
of structural computation, successfully developed for group theory over the past two decades in the CAYLEY system, to algebra generally.

Invited speakers include: George Collins (Linz), George Havas (Brisbane), Charles Leedham-Green (London), Eamonn O'Brien (Canberra), Charlie Sims (New Brunswick, NJ), Wieb Bosma (Sydney), Henri Cohen (Bordeaux), Michael Pohst (Berlin), Jon Carlson (Athens, GA), Derek Holt (Warwick), Stephen Linton (London), Gerhard Schneider (Karlsruche), Greg Bulter (Montreal), John Cannon (Sydney), Bill Kantor (Eugene, OR),

If you wish to participate in this Conference, please contact R.L. Silverstone, The School of Mathematical Sciences, Queen Mary and Westfield College, Mile End Road, London E1 4NS (R.L. Silverstone@qmw.ac.uk) as soon as possible.

## JOINT MATHEMATICS MEETING AMS-CMS-MAA

The American Mathematical Society, the Canadian Mathematical Society and the Mathematical Association of America are holding a joint meeting at the University of British Columbia in Vancouver from 15th to 19th August 1993.

A series of three Colloquium Lectures will be given by Sergiu Klainerman "On the regularity properties of gauge fields in Minkowski space-time". The JefferyWilliams Lecture will be delivered by James G. Arthur on "Trace formulas and automorphic representations". The Jef-fery-Williams Lecture was inaugurated in 1968 to recognise mathematicians who
have made outstanding contributions to mathematical research. The 40th Earle Raymond Hedrick Lectures will be given by Sir Michael Atiyah. The title of the lecture series is "Recent developments in geometry and physics: 4-dimensions". The first will be on history, the second will focus on 3-dimensions, and the third will focus on 4-dimensions.

For more information contact the Mathematics Meetings Bureau at the American Mathematical Society, email Internet: meet@math.ams.org, telephone 401-455-4143.

## MEMORIAL SERVICE JOHN CHARLES BURKILL

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## PROGRAMME AND CONFERENCE FUND

The Society's Programme and Conference Fund is used to give financial support to various mathematical activities in the UK. This fund is administered by the Society's Programme Committee. Grants are made under four main headings.

## 1. Scheme 1 Visitors

Under this scheme, a speaker from abroad is invited to spend about two weeks in the UK, to address a Society Meeting and to give lectures in three or four separate institutions. The Society pays the cost of the visitor's travel to and from the UK and living expenses in London, and the host institutions are expected to share the cost of travel within the UK and local accommodation. LMS Council is anxious that greater use should be made of this scheme to enhance, by such visits, the benefit of LMS membership to those who are not easily able to attend London meetings. In planning the Society's future meetings, Programme Committee will have this scheme in mind, and suggestions from UK institutions for visitors they would like to receive but whose expenses they could not normally afford are strongly encouraged. Programme Committee tries to plan Society Meetings at least six months in advance. Thus a suggestion for a visitor under this scheme should best be made about one year before the proposed visit.

## 2. Scheme 2 Visitors

Under this scheme, some financial support is provided for visitors to the UK who do not address a Society Meeting but will give lectures in at least three separate institutions. Exceptionally, support under this scheme might be provided for a speaker addressing just one meeting which is regional in scope. The LMS contribution under this scheme would be for the visitor's travelling expenses to and from the UK. Host institutions are expected to share the cost of travel within the UK and local accommodation. All arrangements for a visit supported under this scheme are the responsibility of the member who makes the application. An
application, in the form of a letter to the Meetings and Membership Secretary (address below), can be submitted at any time, but should normally be made at least three months before the starting date of the proposed visit, so that the lectures to be given can be publicized in the Society's Newsletter. Applicants are encouraged to seek advantageous airfares and should quote a fare in the application. Grants made under this scheme do not normally exceed $£ 300$. In the past six months, grants have been made under Scheme 2 to support the following visits: Professor W. Bade (H.G. Dales), Dr. A. Jeanneret (J. Hunton), Professor J-M. Lemaire (I.M. James), Professor V. Burenkov (E. Kissin), Professor P. Butzer (J. Clunie).

## 3. fSU Visitor Scheme

Under this scheme the London Mathematical Society will fund a limited number of short visits either by mathematicians from the former Soviet Union (fSU) to the United Kingdom (UK) or by mathematicians from the UK to the fSU. The level of funding will be such that basic travel and subsistence costs will be covered.

Visits to a single institution, to a number of institutions or attendance at a conference will be eligible for funding. Success of an application will depend mainly on the likelihood of potential benefit to mathematics in the fSU.

Applications for a grant under this scheme should be made by mathematicians at UK institutions, both for visits to the UK and for visits to the fSU. They should be supported and countersigned by a member of the Society if the applicant is not already a member of the Society. There is no application form as such : a letter of application should be sent to the Meetings and Membership Secretary (address below) giving details of the academic case for support and details of anticipated costs. This can be done at any time, but normally at least three months before the date of the proposed visit to allow for consideration by the Society's Programme Committee and, in the case of visits to the UK, an announce-
ment of the visit in the Society's Newsletter. A grant under the scheme would normally be for less than $£ 1000$.

All arrangements for a visit under this scheme are the responsibility, of the applicant. The fSU Scheme has its own budget separate from the main Programme and Conference Fund but it is administered by the Programme Committee.

Since the start of the scheme in March the following awards have been made: P.J. Giblin to Moscow; B. Hartley to Krasnoyarsk, Irkutsk and Minsk; J.W. Bruce to Moscow; D. Singerman for S.M. Natanzon to Southampton; R.W. Carter for A. Elashvili to Warwick; A. Trehearne and W. Hodges for visitors to ASL Meeting, Keele.

## 4. Programme and Conference Fund

Grants are made from the Conference Fund to the organisers of conferences to be held in the United Kingdom. Programme Committee tends to give priority to the support of meetings where an LMS grant can be expected to make a significant contribution to the viability and success of the meeting. Support of larger meetings of high quality is not ruled out but for such meetings an LMS grant would normally cover only a modest part of the total cost. An application form, obtainable from the Meetings and Membership Secretary (address below) sets out conditions under which grants are normally made and requests the information Programme Committee usually requires when considering an application. Potential applicants should note that the Society is reluctant to award grants to conferences which clash with the British Mathematical Colloquium.

The following grants for support of conferences have been made within the past six months: $£ 1800$ to B. Bollobas for the Cambridge Combinatorial Conference held in March 1993, £800 to K.A. Brown for the Scottish Algebra Day held in March 1993, £1500 to J. Clunie and M.M. Dodson for 'Fourier Analysis \& Applications' held in March 1993, £1000 to J. Howie for 'Workshop on Geometric and Combinatorial Methods in Group Theory' held in March 1993, £740 to E.L. Ortiz for 'Iberia in the Golden Age' held in March

1993, $£ 1000$ to T.C. Rogers for the 26th European Study Group with Industry held in March 1993, £325 to A.J.W. Hilton for the Reading One Day Combinatorics Colloquium held in May 1993, £800 to D.A. Lavis for 'Stat-Mech9' held in May 1993, £560 to S. Donkin for the GruenbergFest to be held in June 1993, £920 to N. Andersson and B.F. Schutz for the Sixth Gregynog Relativity Workshop to be held in August 1993, £1850 to J.B. Fountain for 'Semigroups, Formal Languages and Groups' to be held in August 1993, $£ 1800$ to C.R. Leedham-Green for the Cayley/Magma Conference on Computational Algebra to be held in August 1993, £1200 to C.T.H. Baker for 'Parallel Numerical Mathematics' to be held in September 1993, £255 to D.A. Brannan for 'One Day Function Theory Meeting' to be held in September 1993, $£ 1000$ to J.P.C. Greenlees for the 8th British Topology Meeting to be held in September 1993, $£ 1200$ to G.A. Grimmett for 'Stochastic Methods in PDE's' to be held in September 1993, £470 to B.E. Johnson for the John Ringrose Retirement Conference to be held in September 1993, £600 to D.W. Reynolds for the 3rd Dublin Differential Equations Meeting to be held in September 1993, £1040 to D. Salinger for the NBFAS-Bordeaux Summer School to be held in September 1993, $£ 1050$ to I.M. James for 'Algebraic Topology' to be held in December 1993, £1500 to C.M. Elliott and Q. Tang for 'Mathematical Theory of Phase Transitions' to be held in July 1994.

Further information about these functions of Programme Committee can be obtained from the Meetings and Membership Secretary, D.J. Collins, School of Mathematical Sciences, Queen Mary and Westfield College, Mile End Road London E1 4NS (telephone 071-975-5480; email d.j.collins@qmw.ac.uk) who will be pleased to discuss proposals informally with potential applicants and give advice on the submission of an application. The next meeting of Programme Committee will be held in September and it would be appreciated if applications to be considered at that meeting could be submitted no later than 31st August 1993.

## A MOSCOW VISIT

The following article concerns a visit to the International Geometrical Colloquium in Moscow in May 1993 by Bill Bruce and Peter Giblin of the University of Liverpool. It is printed here at the Editors' request, in the hope that some of the information may be of use to other potential visitors.

The colloquium was attended by about 100 people, at least half of whom were from outside Russia. Incidentally we had very little trouble obtaining a visa (one of us was charged $£ 5$ but the other was not!), and the Aeroflot flight was inexpensive and enjoyable.

We were housed in a hotel on the outskirts of Moscow to the south, the Hotel Uzkoe. We had requested that someone meet us at Moscow airport, which is some distance outside the city to the north, hence about 45 minutes drive from the hotel. We had heard that taking a private taxi was not a good idea for foreigners arriving with hard currency; later we found that a safe way to take a taxi is first to go to the tourist office at the airport where they will arrange one for you. It costs $\$ 15-\$ 20$, and payment in dollars, here as elsewhere in Russia, is greatly preferred. We were driven to the hotel by a representative of the organisers, for a similar sum.

We discovered rather quickly that hotels and shops do not accept travellers' cheques (even in US\$), and that it is difficult to get them changed even in banks. So it is advisable to carry currency for paying hotel bills, dollars and deutschmarks being preferred to pounds.

There are many shortages in Russia, and even hotel residents can expect to experience some of them. For instance, soap is not provided, and we saw no milk during our week in Moscow. Eggs were served every day in the hotel for breakfast, but we passed long queues for eggs in the city. Fruit and vegetables out of season are outrageously expensive for Russians, but there are many private stalls selling fruit, and for us it was about the same price as here. The difference is in the very low Russian salaries when
measured in hard currency. Typically a lecturer will be paid $\$ 40$ per month. Accommodation is very cheap, even for Russians, but food and basic supplies are unavailable or expensive.

One shortage which can sabotage the best-prepared lecture is chalk. It is best to take your own supply, since available chalk may be of very poor quality. Some of the lectures we attended were actually illegible for this reason. Overhead projectors were available, and used by some lecturers, though projection facilities were primitive. It is best to take your own supplies of acetate sheets and pens.

Many of the mathematicians we met are lecturers at institutions other than Moscow University, and some have to spend essentially all their time teaching during term time. One very able mathematician told us that he had what amounted to two jobs in his institution, resulting in a teaching load of 32 hours per week. Schemes exist for subsidising promising young mathematicians, whether faculty members or students. In the United States the AMS has gathered funds for this purpose, and the French are doing the same. The key contacts here are Bob MacPherson at MIT and J.-M. Kantor at Paris 7. It is clear that French-Russian and US-Russian cooperation is much better organised than links between the fSU and the UK. We enquired about setting up a similar scheme, suggesting that perhaps a single mathematics department, such as Liverpool, might "adopt" a faculty member, or two students, which would cost about $\$ 40$ per month. In the case of a faculty member this might greatly reduce the teaching load, and in the case of a student it might pay the equivalent of a grant. We are investigating the possibility of such an "adoption", and we understand that the appropriate authorities in Moscow University are going to contact us. Of course, it might be even more appropriate to have a link with an outside institute, technical university, or similar. If it is possible to do this, there seems no reason why other mathematics departments in Britain should not do the same. We will
keep the LMS informed about such possibilities.

It is important to note that having collected funds in the West there remains the problem of getting these funds to Moscow. This is a difficult but surmountable problem.

The other obvious need in Russia is for foreign journals, which even the major institutions can no longer afford. It would seem appropriate that organisations in this country which publish
journals might consider sending free copies to say half-a-dozen key institutes. It must be said, however, that the post is unreliable and slow in Russia.

Finally the hospitality and helpfulness of our Russian colleagues cannot be overstated. The organisers of the conference went to great lengths to ensure that the participants had a useful and enjoyable time. They were willing to give up large amounts of personal time to the welfare of the participants.

## TRIESTE INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS Mathematics Activities 1994

Workshop on Fluid Mechanics: 7-25 March, Directors: P.G. Drazin, F.H. Busse, I.A. Eltayeb and W.R. Young, deadline for requesting participation 31 August 1993.

Workshop on Commutative Algebra and its Relation to Combinatorics and Computer Algebra: 16-27 May, Directors A. Simis, G. Valla and Mohan Kumar, deadline for requesting participation 15 November 1993.

Advanced Workshop on Algebraic Geometry: 15-26 August, Directors M.S. Narasimhan, C. Procesi and C.S. Seshadri,
deadline for requesting participation 15 February 1994.

School/Workshop on Variational and Local Methods in the Study of Hamiltonian Systems: 10-28 October, Directors A. Ambrosetti, A. Bahri and G.F. Dell'Antonio, deadline for requesting participation 31 March 1994.

For further information and details contact: Ms Sharon Laurenti, Mathematics Section, International Centre for Theoretical Physics, PO Box 586, Trieste, Italy.

## LOGIC COLLOQUIUM 1993

The Summer meeting of the Association of Symbolic Logic will be held at the University of Keele from 20th to 29th July. The invited speakers are Arnon Avron, Andreas Baudisch, Andreas Blass, Kosta Dosen, Randall Dougherty, Moti Gitik, Ronald Jensen, Dick de Jongh, Ulrich Kohlenbach, Sabine Koppelburg, Daniel Lascar, Daniel Lehmann, Alain Louveau, Daniele Mundici, Jürgen Olbach, Evgenia Rabinovich, Harold Simmons, Robert Stärk, Lou van den Dries, Michiel van Lambalgen, Jaap van Oosten, Alex Wilkie and Boris Zil'ber.

Among a number of participants from the former Soviet Union are Professor Marat Arslanov of Kazan State University and Dr Vladimir Sazonov, Program Systems Institute of the Russian Academy of Science, PreslavlZalessky, who will be funded by grants from the London Mathematical Society.

Further details about the Conference are available from Mrs Jayne Beardmore, Department of Computer Science, University of Keele, Keele, Staffordshire ST5 5BG, telephone 0782 583446, fax 0782 713082, email jayne@uk.ac.keele.cs.

## SPRINGER-VERLAG POSTGRADUATE PRIZES

Springer-Verlag generously donated three prizes for postgraduate students giving the best lectures at the British Applied Mathematics Colloquium at Strathclyde University in April. The prizewinners were: Susan Appleby (Schlumberger, Cambridge) "Variational principles applied to porous solids";

Rebecca Hoyle (DAMTP, Cambridge) "Long wavelength phase instabilities of standing square and alterating rolls"; Peter Robinson (Mathematics \& Statistics, Birmingham) "Collapse of a cavitation bubble in a stagnation point flow".
F.M. Leslie, University of Strathclyde

## CAMBRIDGE Mathem

## Exercises for Fourier Analysis

T. W. KÖRNER

In this new book Dr Körner has compiled a collection of exercises on Fourier analysis that will thoroughly test the understanding of the reader. They are arranged chapter by chapter to correspond with the author's popular $A n$ Introduction to Fourier Analysis, and for all who enjoyed that book, this companion volume will be an essential purchase.
$£ 35.00$ net HB 0521432766400 pp. 1993
£15.95 net PB 0521438497 Still available:
An Introduction to Fourier Analysis
$£ 22.95$ net PB 0521389917608 pp. 1989

## Fourier Integrals in Classical Analysis

CHRISTOPHER D. SOGGE
The main theme of this book is the interplay between ideas used to study the propagation of singularities for the wave equations and their counterparts in classical analysis. In particular, basic problems in classical analysis, such as estimates for maximal functions and eigenfunctions, are attacked using modern microlocal techniques.
£24.95 net HB $0521434645 \quad 240$ pp. 1993
Cambridge Tracts in Mathematics 105

## Numerical Mathematics

A Laboratory Approach
The late S. BREUER and G. ZWAS
Numerical Mathematics is a unique textbook that introduces computational microcomputer laboratories as a vehicle for teaching algorithmic aspects of mathematics. This is achieved through a sequence of laboratory assignments, presupposing no previous knowledge of calculus or linear algebra, where the 'chalk-and-talk' lecturer turns into a laboratory instructor. $£ 30.00$ net HB $0521440408 \quad 320 \mathrm{pp} .1993$

## Cohomological Methods in Transformation Groups

## C. ALLDAY and V. PUPPE

This is an account of the theory of certain types of compact transformation groups, namely those that are susceptible to study using ordinary cohomology theory and rational homotopy theory. Readers with a relatively modest background in algebraic topology and homology theory will find it approachable, but it will also be a useful reference for more specialised readers. $£ 50.00$ net HB $0521350220 \quad 488$ pp. 1993
Cambridge Studies in Advanced Mathematics 32

## Efficient Algorithms for Listing Combinatorial Structures

## LESLIE ANN GOLDBERG

The research described here gives some answers to if the following questions: which families of combinatorial structures have fast computer algorithms for listing their members? What general methods are useful for listing combinatorial structures? How can these be applied to those families which are of interest to theoretical computer scientists and combinatorialists?
£27.95 net HB 0521450217176 pp. 1993 Distinguished Dissertations in Computer Science 5

## Hyperbolicity and Sensitive Chaotic Dynamics

Fractal Dimensions and Infinitely Many Attractors in Dynamics

## JACOB PALIS and FLORIS TAKENS

This is a self-contained introduction to the classical theory of homoclinic bifurcation theory, as well as its generalizations and more recent extensions to higher dimensions. It is also intended to stimulate new developments, relating the theory of fractal dimensions to bifurcations, and concerning homoclinic bifurcations as generators of chaotic dynamics.
$£ 30.00$ net HB $0521390648 \quad 244$ pp. 1993
Cambridge Studies in Advanced Mathematics 35

## natics

## Hilbert Space

Compact Operators and the Trace Theorem JAMES R. RETHERFORD
of Professor Retherford's aim in this book is to provide the reader with a virtually self-contained treatment of Hilbert space theory, leading to an elementary proof of the Lidskij trace theorem. Many exercises and hints are included, and throughout the emphasis is on a user-friendly approach.
£27.95 net HB 0521418844144 pp. 1993
£ 13.95 net PB 0521429331

## Special price for LMS members <br> £21.00 HB, $£ 10.50 \mathrm{~PB}$ <br> London Mathematical Society Student Texts 27

## Geometric Group Theory

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## MATHEMATICS AND COMPUTING



## SCIENTIFIC PROGRAMMER'S TOOLKIT

M. H. BEILBY, R. D. HARDING and M. R. MANNING

Available (in $5.25^{\prime \prime}$ or $3.5^{\prime \prime}$ format) for IBM-PC compatible machines. Published in 1991 by Adam Hilger (Bristol, Philadelphia and New York), ISBN 0750300388. £95 plus VAT, with quantity discounts, and $£ 120+$ VAT extra for the source code. Available from the Institute of Physics Publishing (0272 297481).

The Scientific Programmer's Toolkit has been written for use with Turbo Pascal, although it can be adapted to run under other Pascal systems. It claims to be "an aid to software engineering" which it does appear to be. However, potential users should realise at the start that, in order to get maximum benefit from this package, they should be very familiar with the Pascal environment.

The toolkit is divided into four types of programs, based on the concept of levels. The simplest to use programs are Level 3 programs which are ready-to-run. There is a program which consists of routines for performing quick calculations, eg. plotting functions, finding roots, solving linear equations - these are all quite easy to use. There is a set of routines for solving Laplace's Equation, solving differential equations and fitting Fourier series.

The other levels involve different degrees of involvement with the Pascal environment, from Level 2 where some supplied routines can be incorporated into the user's programmes, to Level 1 where the greater variety of routine can be included and finally to Level 0 which provides an interface to the machine operating system.

This software is certainly not for the casual scientific user; anyone looking for software to solve equations, perform matrix and determinant manipulations, do simple integrations and differentiations, etc, should look elsewhere. However, anyone with a good working knowledge of Pascal will find here a wealth of programmes and units which would enable them to write highly sophisticated routines for a very wide range of scientific applications. The access available to graphics is particularly impressive. The manual, over 400 pages long, is well written with a very wide range of examples throughout.

Dr J. Lawrence
Physics \& Astronomy Department St Andrews University


This occasional column is for the discussion of topics on the boundary between mathematics and computer science, thus covering both applications of mathematics in computer science and uses of computers in mathematics. Relevant material such as opinions, notices about Maths \& CS meetings and reviews of research, teaching and support software is solicited. Contributions should be sent to the editors of the column: rd@dcs.st-and.ac.uk (Roy Dyckhoff, University of St Andrews) dfh@maths.warwick. ac.uk (Derek Holt, University of Warwick).

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Applications (including c.v., list of publications and an account of research interests) should be sent to the Chairman, Mathematical Institute, 24-29 St Giles', Oxford OX1 3LB (Tel: Oxford (0865) 273576) not later than 15 August 1993, from whom further particulars may be obtained.

## UNIVERSITY OF CAMBRIDGE

## Department of Pure Mathematics and Mathematical Statistics

## Rouse Ball Professorship of Mathematics

The Board of Electors to the Rouse Ball Professorship of Mathematics invite applications for this Professorship, following the retirement of J.G. Thompson. Candidates may be working in any area of pure mathematics, including the mathematical theory of partial differential equations. The University follows an equal opportunities policy. Further information may be obtained from the Secretary General of the Faculties, General Board Office, The Old Schools, Cambridge CB2 1TT, to whom applications (ten copies) should be sent, together with the names of two referees, so as to reach him not later than 24 September 1993.

## PARALLEL NUMERICAL MATHEMATICS SYMPOSIUM

A symposium on Parallel Numerical Mathematics is being organised by the Centre for Novel Computing, University of Manchester and the Manchester Centre for Computational Mathematics in conjunction with the London Mathematical Society on 9th and 10th September 1993. This Symposium will cover recent work in the area of parallel numerical mathematics, with particular emphasis on parallel numerical analysis. Speakers are drawn from industry and academia and are all actively working in the field. This symposium will be of interest to numerical analysts working in the area of Parallel Numerical Analysis, and scientists and engineers who are using parallel computers and need to know about the latest advances in parallel computation. Applications of parallel methods to areas including nonlinear optimization, linear programming, water modelling, crash simulation, matrix computations will be described by the speakers.

The Symposium will be held at the Department of Computer Science, Computer Building, University of Manchester. The department has access and facilities for disabled visitors. Every effort will be made to cater for special dietary requirements if details are provided with the completed application forms. Accommodation is provided in Hulme Hall, one of the University's halls of residence about 15 minutes walk, or a short bus ride, from the department. Accommodation can only be guaranteed if the application form is returned by the early booking date of 9th August.

Speakers will include: Robert Schreiber (NASA) "Subway, a communication comriits for the Maspar MP-x computers"; Danny C. Sorensen (Rice University) "Implicitly Restarted Arnoldi Methods for Large Scale Eigenvalue Problems"; Kevin Burrage (University of Queensland) "Drought monitoring through Parallel Computing"; Ken McKinnon (University of Edinburgh) "Dynamic Programming on Distributed memory MIMD machines"; Salvatore Filippone (IBM ECSEC) "Numerical algorithms on distributed memory
architectures"; Bo Kagstrom (University of Umea) "Design, Modelling and Evaluation of Shared Memory and Distributed Memory"; Ian Gladwell (Southern Methodist University) "Parallel Algorithms for Functional Equations"; Nicholas J Higham (Manchester University) "Parallel Computation of the Polar Decomposition"; Eric Grosse (AT\&T Bell Labs) "Domain decomposition on an FDDI network"; Guy Lonsdale (Engineering System International GmbH ) "Migrating industrial crash-simulation software using the message-passing programming paradigm"; Virginia Torczon (Rice University) "Parallel Pattern Search Methods for Unconstrained Optimization".

Manchester University is Britain's largest campus university. The University of Manchester is within a mile of the city centre and is easily accessible by train and road and also by air via Manchester's International Airport. The Manchester Centre for Computational Mathematics (MCCM) is based upon the Numerical Analysis sections of the Departments of Mathematics in the University and UMIST. There are nine permanent members of staff, a temporary lecturer, and a number of Researchers, in these sections. Also linked to MCCM are the computational mathematicians in other sections. There is a strong postgraduate and research programme in MCCM. Altogether, there are about 50 full-time members of the Mathematics Department in the University and 30 in the Mathematics Department at UMIST. The Centre for Novel Computing (CNC) was established in 1990 to help bring parallel and novel computing techniques to users. It undertakes projects with users from academia and industry. Recently the CNC has acquired a 32 cell KSR1 from Kendall Square Research Inc. The Department is one of the oldest Computer Science departments, and the largest in the country. The world's first stored program computer was built, and virtual memory was invented here.

Application forms are available from

Ursula Hayes, Department of Computer Science, University of Manchester, Manchester M13 9PL, telephone: (061) 275 6172; fax: (061) 275 6200; email: ursula@cs.man.ac.uk. The fee of $£ 270.00$ includes the Symposium fee, proceed-
ings, lunches and coffee. The academic and LMS members fee is $£ 150.00$ and for students $£ 90.00$. Accommodation at Hulme Hall is $£ 25.00$ a night.

## INTERNATIONAL CONGRESS OF MATHEMATICIANS 1994 FIRST ANNOUNCEMENT

The International Congress of Mathematicians will be held in Zürich, Switzerland from Wednesday 3rd to Thursday 11th August 1994. It will be held under the auspices of the International Mathematical Union and under the sponsorship of the Swiss Mathematical Society, the Swiss Academy of Sciences and the Swiss National Science Foundation.

There will be about 16 invited onehour expository addresses covering recent developments in the major areas of mathematics and about 145 invited 45 -minute lectures in 19 sections. The sections are as follows:

1) Logic; 2) Algebra; 3) Number theory; 4) Geometry; 5) Topology; 6) Algebraic geometry; 7) Lie groups and representations; 8) Real and complex analysis; 9) Operator algebras and functional analysis; 10) Probability and statistics; 11) Partial differential equations; 12) Ordinary differential equations and dynamical systems; 13) Mathematical physics; 14) Combinatorics; 15) Mathematical aspects of computer science; 16) Numerical analysis and scientific computing; 17) Applications of mathematics in the sciences; 18) Teaching and popularization of mathematics; 19) History of mathematics.

All Ordinary Members of the congress will have the opportunity to present short communications in the form of posters and to explain their work during scheduled poster sessions. Informal mathematical seminars may be organized on the initiative of groups of participants. All invited lectures will be published in the Proceedings of ICM 94; a complimentary copy of these Proceedings will be sent to each Ordinary Member after the congress. Abstracts of the invited lectures and of all short communications will be distributed to Ordinary Members at the beginning of
the congress free of charge. English, French, German and Russian are the official languages of the congress.

The plenary sessions of the congress will be held at the Kongresshaus of the City of Zürich while the afternoon sessions will take place in lecture theatres at the Federal Institute of Technology (ETHZ) and at the University of Zürich. On Sunday 7th August, no scientific activities are scheduled. A program of mathematical films put together by the Organizing Committee will be shown at the end of afternoon sessions.

An opening reception for all registered participants will be held in the late afternoon of Wednesday 3rd August. On Friday evening, 5th August there will be a buffet-banquet on the Irchel campus of the University of Zürich. A concert of classical music will be given at the Tonhalle on Tuesday evening, 9th August, on behalf of the congress. These three events are free to all Ordinary and Accompanying Members of the congress. During ICM 94, short day trips to several places of interest in Switzerland will be available. Preregistrations will have an opportunity to purchase these day trips in advance, as well as various pre-and postcongress tours. The excursions and tours will be arranged by the agency MCI Travel (see below). More detailed descriptions of these activities will appear in the Second Announcement. Formal dress will not be required on any occasion during the congress.

All correspondence related to the congress (enquiries, requests, application and reservation forms, abstracts etc) should be sent to the official congress address: ICM 94, International Congress of Mathematicians, ETH Zentrum, CH-8092 Zürich, Switzerland. The agency MCI

Travel in Zürich, a professional congress and tour organizer, has been appointed by the Organizing Committee to handle all matters related to individual participants: hotel reservations, responding to requests for Announcements, preregistrations, collecting of fees and advance payments, excursions etc.

Participants will be housed in a variety of hotels in Zürich and vicinity; the necessary reservations have already been made by MCI Travel. In addition MCI will make available student residences and try to provide a certain amount of private accommodation at a flat rate for Members willing to put up with less comfort. Detailed information on location and rates will be provided in the Second Announcement, which will include a preregistration/housing request form. Together with their registration material all Ordinary and Accompanying Members will obtain a pass which entitles them to travel free of charge on all public transport (trams, buses, trains, boats) in and around Zürich. Swissair has been appointed Official Carrier for the congress. Please contact your nearest Swissair office for assistance with your travel arrangements and the handling of group flights.

The Second Announcement of ICM 94 will describe the activities of the congress in more detail and provide instructions on how to complete the preregistration
process and obtain accommodations. It will provide more, although not complete, information on the scientific program and give instructions regarding the submission of abstracts of communications to be presented in poster form. The Second Announcement will also include advice on how to proceed upon arrival at either Zürich airport or Zürich main station and it will be accompanied by a brochure describing the day trips and tours organized by MCI Travel.

The Organizing Committee is aware of several conferences of a more specialized nature scheduled immediately before or after ICM 94. The Second Announcement will contain a list of such meetings; deadline for entries is 15th October 1993.

The Society has a limited number of copies of the First Announcement. Whilst stocks last, a copy may be obtained by writing to the Administrator, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL. The announcement contains a request form for the Second Announcement. Alternatively members can write directly to ICM 94, International Congress of Mathematicians, ETH Zentrum, CH-8092 Zürich, Switzerland to request the Second Announcement. Such requests should be received by ICM 94 no later than 15th October 1993. The Second Announcement will appear before the end of 1993.

## 13TH ONE-DAY FUNCTION THEORY MEETING

The 13th One-Day Function Theory Meeting will be held in Walton Church at The Open University on Monday 27th September 1993. The meeting will start with coffee at 10.30 and there will be about 6 speakers, starting at 11.00 and finishing at 17.00. The Day has received financial support from the LMS Conference Fund.
Everyone interested is very welcome to
come, but it would be helpful if the local organisers could be given some idea in advance if you are thinking of attending. For further information and the schedule for the Day, please contact Professor David Brannan, Department of Pure Mathematics, The Open University, Walton Hall, Milton Keynes MK7 6AA, e-mail: janet"d.a.brannan@uk.ac.open.acs.vax".

## PETER HALL

Dr Peter Hall who was elected a member of the London Mathematical Society on 20 January 1984, died on 29 April 1993 at the age of 36.
 $\stackrel{(1)}{-1}$ I Mathematics
Music of Rea
J. Dieudonné, Paris, France
Translated from French to English by J. Dales, H.G. Dales
1992. Approx. 300 pp. 41 figs. Hardcover £24.50. ISBN 3-540-53346-X

Mathematics - The Music of Reason is both a readable and entertaining book and a source of reference on milestones in the history of mathematics and the evolution of mathematical thought. It is permeated by the attitude that was already that of the ancient Greeks and is still nowadays the basic attraction of mathematics for mathematicians, namely that this subject is as much an art as a science, and the quest for knowledge is a quest for beauty in its purest form.
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Part 1: 0-8218-1494-X, 560 pp. (AMS),
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## Algebraic Computing in General Relativity

Lecture Notes from the First Brazilian School on Computer Algebra Vol. 2
Malcolm A. H. MacCallum, James E. Skea,
Raymond G. McLenaghan, and Julian Dermott McCrea $0-19-853646-1,256$ pp. $1993 £ 25.00$

## Riemannian Geometry

T. J. Willmore

0-19-853253-9, 256 pp., 15 line drawings,
Clarendon Press, August $1993 £ 35.00$

## Advances in Number Theory

The Proceedings of the Third Conference of the Canadian Number Theory Association
Edited by Fernando Q. Gouvêa, and Noriko Yui
0-19-853668-2, 558 pp., halftones, Clarendon Press, April $1993 £ 50.00$

Thermomechanics of Evolving Phase Boundaries in the Plane Morton E. Gurtin Oxford Mathematical Monographs 0-19-853694-1, 160 pp., line drawings, Clarendon Press, May $1993 £ 35.00$

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Ioan Mackenzie James was born in 1928 and educated at St Paul's School and Oxford. He is the Savilian Professor of Geometry at Oxford and has done wide-ranging work in topology, particularly homotopy theory. He was elected to Fellowship of the Royal Society in 1968. The London Mathematical Society awarded him the Junior Berwick Prize in 1959 and the Senior Whitehead Prize in 1978. He was Treasurer of the Society from 1969 to 1979 and he was the Society's 62nd President, from 1984 to 1986.

## DIARY

The diary lists Society meetings and other events publicised 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.

## 1993

JULY
2 LMS Popular Lectures, Imperial College, London (205)(206)
4-11 Analytic and Geometric Aspects of Hyperbolic Space, LMS Durham Symposia, Durham University (200)
4-16 Probability Theory of Spatial Disorder and Phase Transition, Cambridge (202)
5-9 14th British Combinatorial Conference, Keele University (188)(200)
5-9 Annual Meeting of the Australian Mathematical Society, Wollongong, Australia (198)
8-9 Workshop on Metastability and Hysteresis, Heriot-Watt (206)
11-16 Computational Techniques in Spectral Theory and Related Topics Workshop, Gregynog, Wales (201)
11-21 Complex Dynamics, LMS Durham Symposia, Durham University (188)(200)
12-16 Combinatorial Mathematics and Combinatorial Computing Conference, Adelaide, Australia (189)
12-16 Algebraic Graph Theory, ICMS, Edinburgh (197)
22-1 Aug Vector Bundles in Algebraic Geometry, LMS Durham Symposia, Durham University (200)
26-30 Randomness and Computation Workshop, Edinburgh (197)
26-30 Classical and Axiomatic Potential Theory Workshop, France (202)
26-6 Aug Séminaire de Mathématiques Supérieures, Montreal, Canada (199)
AUGUST
1-14 Groups Galway/St Andrews 1993, Galway, Ireland (201)
3-6 Transformation Semigroups and Their Applications Conference, University of Essex (205)
7-21 Semigroups, Formal Languages and Groups, University of York (205)
17-20 The Mathematical Heritage of Sir William Rowan Hamilton, Dublin, Ireland (193)
18-22 Differential Equations, Plovdiv, Bulgaria (197)
23-25 Twistor Theory Conference, Plymouth (201)
23-26 Perturbations of Black Holes and Relativistic Stars, Sixth Gregynog Relativity Workshop, Gregynog, Powys (205)
23-4 Sep Polytopes, Ontario Canada (200)
SEPTEMBER
6-9 Bubble Dynamics \& Interface Phenomena Conference, Birmingham (188)
12-16 Differential Equations Meeting, Dublin (201)
13-17 Computer Science Logic 1993 Conference, University College, Swansea (201)
13-17 Stochastic Methods in Partial Differential Equations International Symposium, Isaac Newton Institute for Mathematical Sciences, Cambridge (206)
17-20 Technology in Mathematics Teaching, University of Birmingham (200)
19-25 Algebraic Groups and Lie Theory, LMS-SERC Postgraduate Short Course, University of Lancaster (205)
20-24 Ordinary Differential Equations and Their Applications, Florence, Italy (198)
23-24 Higher Order Algebra, Logic and Term Rewriting Workshop, Amsterdam, Holland (204)
24 Retirement J.R. Ringrose - Meeting, Newcastle upon Tyne (199)(206)
OCTOBER
1-3 Joint AMS-DMV Mathematics Meeting, University of Heidelberg, Germany (205)
15 London Mathematical Society Meeting, London

## NOVEMBER

19 London Mathematical Society Meeting, London
1994
JUNE
1-7 Algebraic Topology Conference, Barcelona, Spain (201)
13-17 Elliptic \& Parabolic Problems conference, Pont-a-Mousson, France (204)

[^2]
[^0]:    We, the undersigned members of the London Mathematical Society, nominate
    (block letters)
    for election as (delete as applicable) Member-at-Large of Council (one-year/two-year term)/Officer (insert Office for which nominated)
    in the 1993 Council Elections of the Society.
    Nominator's signature and printed name
    Seconder's signature and printed name
    I confirm that I am willing to stand for election as indicated above.
    Nominee's signature

[^1]:    A Memorial Service will be held for Charles Burkill, FRS at Little St Mary's Church, Cambridge, on Saturday 16 October 1993 at 2.15 pm. An address will be given by Professor E.J. Kenney, F.B.A.

[^2]:    The Newsletter is published monthly except in August. Items and advertisements for inclusion in the Newsletter should be sent to the Editor, Susan Oakes, London Mathematical Society, Burlington House, Piccadilly, London WIV ONL, to arrive before the first day of the month prior to publication. Telephone 071-437 5377, Fax 071-439 4629, E-mail Ims@uk.ac.kcl.cc.oak.

