THE LONDON MATHEMATICAL SOCIETY NEWSLETTER
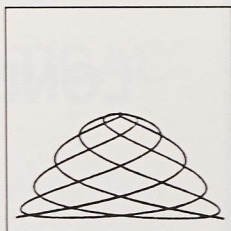
No. 141   June 1987

Forthcoming Meetings

Friday 19 June 1987, Burlington House
(M.S. Paterson, M.O. Rabin)
Friday 16 October 1987, Burlington House
Friday 20 November 1987, Burlington House

LMS SPITALFIELDS LECTURES

The first Spitalfields Lectures will be given on Friday, 5th June 1987 at the University of Warwick. These are colloquium style lectures, intended to be accessible to a general mathematical audience, delivered by members of the Symposium on Operator Algebras and Applications which is being held at Warwick between October 1986 and August 1987.

The lecturers are: 11.30 a.m. E.G. Effros (UCLA), 2 p.m. T.A. Loring (Berkeley/Warwick), 3 p.m. D.E. Handelman (Ottawa), 5 p.m. G.K. Pedersen (Copenhagen).

All the lectures will be held at the Mathematics Institute, University of Warwick. An informal lunch will be held in the Mathematics Institute at 12.30 p.m. Bookings and payment for the lunch (£2 per head) must be made by 22nd May to A. Gutkind, Mathematics Research Centre, University of Warwick, Coventry CV4 7AL. Cheques should be made payable to the University of Warwick. All interested are welcome to attend. For further information, please write to the organiser D.E. Evans, at the same address.

LONDON MATHEMATICAL SOCIETY

Notice of General Meeting

There will be a General Meeting of the Society on Friday, 19th June 1987 at 3.30p.m. in the Meeting Room of the Geological Society, Burlington House, Piccadilly, London W.1., to consider a proposal by the Council of the Society to delete the existing By-Law II,3 and to substitute that printed below.

The new By-Law, if accepted, will increase the annual subscription of Corporation and Institutional members for 1987-88 to £276 from the 1986-87 level of £256.

Text of the proposed By-Law II,3

The annual subscription to the Society of Corporation and Institutional Members for the 1987-88 session shall be £276, inclusive of one volume of the Bulletin and two volumes of the Journal and of the Proceedings, except that those Corporation and Institutional Members who have more than one Representative shall pay an additional subscription of £6 for each Representative in excess of one.

C.J.Mulvey,
Council and General Secretary.

LONDON MATHEMATICAL SOCIETY

Professor M.S. Paterson (Warwick)
NETWORK COMPLEXITY AND THE P ≠ PN PROBLEM

Professor M.O. Rabin (Harvard and Jerusalem)
The 1987 Hardy Lecture
MATHEMATICAL ASPECTS OF PARALLEL COMPUTING STRUCTURES

**Friday, 19 June, 1987
at 3.30 p.m.**

**Geological Society's Meeting Room
Burlington House
Piccadilly, London W1**

All interested are very welcome.
Tea will be served at 4.30 p.m.

1987 HARDY LECTURE TOUR

The 1987 Hardy Lecturer, Professor M.O. Rabin (Harvard and Hebrew University, Jerusalem), will give the following lectures:

Monday 8 June — Cardiff
Parallel Computations in Algebra
5.30 p.m., John Pryde Lecture Theatre, Pre-Clinical Building, Park Place

Wednesday 10 June — Manchester
Control in Parallel and Distributed Computing
2.30 p.m., Lecture Theatre 1.1, Department of Computer Science

Friday 12 June — Edinburgh Mathematical Society, Edinburgh
Randomized Algorithms in Number Theory
4.30 p.m., Lecture Hall B, David Hume Tower

Monday 15 June — Cambridge
Graph Algorithms
5.00 p.m., Room A, Arts School

Wednesday 17 June — Kent, Canterbury
Parallel Computations in Algebra
2.30 p.m., Computing Laboratory Lecture Theatre

Friday 19 June — London Mathematical Society, London
1987 HARDY LECTURE
Mathematical Aspects of Parallel Computing Structures
5.00 p.m., Burlington House, London

Monday 22 June — Warwick
Graph Algorithms
3.00 p.m., Room 104, Department of Computer Science

Thursday 25 June — Oxford
Parallel Computations in Algebra
3.00 p.m., Mathematical Institute

Friday 26 June — Bristol
Randomized Algorithms in Number Theory
2.15 p.m., Lecture Theatre 1, School of Mathematics

Members who intend to travel to one of the meetings addressed by the Hardy Lecturer are advised to check the time and venue with the Department concerned. General enquiries about Professor Rabin's visit may be directed to the LMS Administrator, Miss Susan Oakes. Tel: 01 437 5377.

LONDON MATHEMATICAL SOCIETY

An Evening of Popular Lectures

Friday 26 June 1987, Rupert Beckett Lecture Theatre,
Arts Building, University of Leeds

Friday 3 July 1987, Great Hall, Sherfield Building,
Imperial College, Exhibition Road, London SW7

7.30p.m. Dr W.A. Hodges
GAMES THAT SOLVE PROBLEMS
9.00p.m. Professor F.C. Piper
CODES AND CIPHERS

ALL INTERESTED ARE WELCOME   COFFEE WILL BE SERVED AT 8.30p.m.

The lectures are intended to be suitable for a general audience and no specific mathematical knowledge will be assumed. Although the talks are not primarily intended for professional mathematicians everyone is welcome and some members may wish to apply for tickets for friends or relatives.

Admission to the lectures will be by ticket only. Applications for the lectures on Friday 26 June at the University of Leeds should be sent to Mrs Backhouse, School of Mathematics, University of Leeds, Leeds LS2 9JT. Applications for lectures on Friday 3 July at Imperial College, London should be sent to Miss Susan Oakes, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL. A stamped-addressed envelope would be appreciated. There is no charge for admission.

RECENT SERC AWARDS

Round 1 1985/86
Visiting Fellowships

A.H.M. Hoare, Birmingham. *Applications of combinatorial group theory.*

J.F. Adams, Cambridge. *Cohomology of Exceptional lie groups.*

T.N.T. Goodman, Dundee. *Shape preserving approximation by spline functions in two variables.*

D.S. Jones, Dundee. *Kriegsmann (USA), Scattering of waves by inhomogeneous obstacles.*

C. Kearton, Durham. *E. Bayer-Fluckiger, Applications of number theory to cyclic group actions on spheres.*

K.A. Brown, Glasgow. *T. Levasseur (France), Problems in enveloping algebras of lie algebras, and rings of differential operators.*

D.R. Cox, Imperial College. *I. Rodriguez (ITURBE), Applied stochastic processes.*

R.W. Tucker, Lancaster. *J.A. Azcarraga (Spain), Quantum co-cycles and field theory.*

R. Brown, North Wales. *J.L. Loday (France), Applications of Van Kampen's theorem for diagrams of spaces.*

C.J.K. Batty, Oxford. *F.W. Schultz, C* − Algebras and their states.*

C.R. Leedham-Green, Queen Mary College. *A. Mann, Groups of finite coclass.*

W. Plesken, Queen Mary College. *H.J. Zasseniiaus (USA), Orders and group rings.*

D.E. Evans, Warwick. *J.T. Lewis, Operator algebras and applications.*

C.R. Hajarnavis, Warwick. *T. Levasseur (France), Differential operators on singular varieties and premature ideals.*

Research Grants

J.D. Key, Birmingham. *Extensions of Steiner systems.*

A.R. Prince, Heriot-Watt. *Sporadic simple groups.*

N.J. Cutland, Hull. *Research symposium on non standard analysis and its applications.*

W.A. Green, Nottingham. *Study visit to Australia.*

Round 2 1985/86
Visiting Fellowships

E.A.H. MacCallum, I.W. Roxburgh, Queen Mary College. *G.F.R. Ellis (South Africa).*

Research Grants

J.N. Davenport, Bath. *Algebraic research using Scratch-Pad II.*

M.B. Zaturska, Bristol. *Mathematical modelling of ignition in combustible systems.*

J.R. Whiteman, Brunel. *Finite element treatment of singularities in 3D boundary value problems with applications to fracture mechanics.*

D. Williams, Cambridge. *Wiener-Jopf theory and Malliavin calculus.*

D.G. Kendal, Cambridge. *Statistical theory of shape and its applications.*

M.B. Batchelor, Cambridge. *Physical application of graded manifold theory.*

M.E. McIntyre, Cambridge. *Two-dimensional vortex flow as a dynamical system.*

J.E. Besag, P.J. Green, B.T. Porteous, Durham. *Image processing applications.*

P.R. Fisk, G. Cohen, P. Armitage, Edinburgh. *Sequential methods in statistics.*

E. Renshaw, Edinburgh. *Spatial inference and the stochastic development of biological branching systems.*

A.A. Lacey, Heriot-Watt. *Behaviour of moving free boundaries.*

E.B. Davies, King's College. *Spectral theory of elliptic differential operators.*

P.R. Turner, Lancaster. *Numerical analysis summer school.*

G. Tunnicliffe-Wilson, Lancaster. *Time scale estimation from time series data.*

H.G. Dales, Leeds. *Banach algebras and automatic continuity.*

H.R. Morton, Liverpol. *Geometry of knot polynomials.*

P.J. Slodowy, Liverpool. *Relations between lie group theory and singularity theory.*

C.T.H. Baker, I. Gladwell, Manchester. *Numerical modelling of nonlinear funtional equations.*

P.J. Eccles, J.N. Ray, G. Walker, Manchester. *The algebra and number theory of the interated complex transfer.*

B. Hartley, P.J. Rowley, Manchester. *Symposium on representation theory of groups and related topics.*

N. Ray, O.J. Webb, Manchester. *Partially ordered sets in partition combinatorics and group theory.*

D.W. Wood, Nottingham. *Algebraic functions generated by the transfer matrices of statistical mechanics.*

R. Penrose, Oxford. *Twistorial methods in the theory of representations of reductive lie groups.*

T. Benjamin, Oxford. *Combined mathematical and experimental research on non linear systems.*

I.C. Percival, Queen Mary College. *Nonlinear dynamics.*

M.B. Green, Queen Mary College. *Superstring theories.*

I.C. Percival, F.M. Vivaldi, Queen Mary College. *Nonlinear dynamics.*

M.J. Baines, Reading. *Proposal to establish a centre for computational fluid dynamics at the University of Reading.*

J. Wright, Reading. *Jordan operator algebras.*

J.A.G. Vickers, R.A.D. Inverno, Southampton. *Quasi-local structure in general relativity.*

R.A. Fenn, Sussex. *Sussex geometric topology symposium 1987.*

A. Carbery, Sussex. *Classical harmonic analysis on Euclidean spaces.*

A. Truman, J. Hawkes, I.M. Davies, Swansea. *The 1988 congress of the international association of mathematical physics.*

D.B.A. Epstein, D.F. Holt, Warwick. *Computing in mathematics.*

I.N. Stewart, D.M.Q. Mond, R.M. Roberts, Warwick. *Applications of singularity theory.*

J.A. Green, Warwick. *Representation of classical and related groups.*

J.H. Rawnsley, Warwick. *Quantization of field theories with anomalies.*

D.A. Rand, R.S. Mackay, Warwick. *Renormalisation for arbitrary rotation numbers.*

M.V. Berry, Wills Physics Lab. *Adiabatic stability and Hermitian chaos.*

Round 3 1985/86
Visiting Fellowships
A. Spence, Bath. *A.D. Jepson (Canada), The numerical solution of nonlinear and bifurcation problems.*

Bath. *F.J. Sabina (Mexico), Multiple scattering from arrays of cracks and inclusions.*

J.E. Bowcock, Birmingham. *S.C. Wu, Mathematical modelling and analysis of spot welding.*

J.F. Adams, Cambridge. *N.J. Kuhn, Algebraic topology − Splitting via symmetry.*

G. Winskell, Cambridge. *R. Statman, Syntax and semantics of typed lambda calculi.*

T.J. Pedley, Cambridge. *C.D. Bertram (Australia), Theoretical modelling of experiments on flow in collapsible tubes.*

T.J. Pedley, Cambridge. *R.D. Kamm (USA), Unsteady flow and gas mixing in collapsible tubes: Models of normal and artificial ventilation.*

T.W. Korner, Cambridge. *G. Brown, Sets of multiplicity and relate topics.*

E. Corrigan, Durham. *L. Palla (Hungary), Symmetry breaking in string theories.*

M. Van Den Berg, Heriot-Watt. *J.T. Lewis (Ireland), Investigation of condensation in the interacting boson gas and theory of large deviations.*

A.C. Atkinson, Imperial College. *L.R. Pericchi (Venezuela), Transformations and non-regular likelihood.*

M.E. Keating, Imperial College. *A.J. Berrick (Singapore), Algebraic k-theory in low dimensions.*

E.B. Davies, King's College. *O.S. Rothaus (USA), Sobelev inequalities for second order elliptic differential operators.*

J. Brindley, Leeds. P.G. Drazin, Bristol. *R.L. Pfeffer (USA), Nonlinear baroclinic waves.*

C.J.K. Batty, Oxford.

A.J. Macintyre, Oxford. *L. Pacholski (Poland). Computational complexity of certain classes of predicates.*

I.C. Percival, Queen Mary College. *J.D. Meiss, Transport in Hamiltonian systems of more than two degrees of freedom.*

C.R. Leedham-Green, Queen Mary College. *M. Ronan (USA), Building and Chevalley groups.*

G.E. Bell, St Andrews. *A.S. Wood (Portugal), An unconditionally stable explicit implementation of the enthalpy method.*

R.Y. Sharp, Sheffield. *J.I. Nishimura (Japan), Ideal-adic completions of nonetherian rings.*

D.M. Sloan, Strathclyde. *B. Fornberg (USA), Numerical solution of the Navier-Stokes equations for large Reynolds numbers.*

R.M. Nisbet, Strathclyde. *P.H. Crowley (USA), Phase locking in models of stage-structured populations.*

D.E. Edmunds, Sussex. *R.C. Brown (USA), Weighted interpolation in equalities.*

D.E. Edmunds, Sussex. *H. Triebel, Function spaces, interpolation theory and partial differential equations.*

J.W.P. Hirschfeld, Sussex. *J.F. Voloch (Brazil), Applications of algebraic geometry to combinatories.*

J.A. Bather, Sussex. *A.J. Petkau (Canada), Planning sequential experiments.*

E.R. Johnson,University College. *M.A. Page (Australia),Upstream influence and seperation in flow past obstacles on a bete plane.*

J.H. Rawnsley, Warwick. *P.A. Horvathy (Ireland), Stability of monopoles.*

J.B. Fountain, York. *M. Petrich (Canada), Order in semigroups, rings and groupoids.*

Research Grants
J.Y. Holyer, Bristol. *Double diffusion and internal waves.*

D.B. Fairlie, Durham. *Lorentz invariance in string and superstring quantization.*

L.W.M. Morland, East Anglia. *Elastic − plastic wave interaction.*

G.F. Vincent-Smith, M. Lunn, Oxford. *Symposium on large deviations and their applications.*

B.E. Johnson, Newcastle upon Tyne. *Conference on deformation theory of algebras.*

Freeman, Newcastle upon Tyne. *Visit to Japan to study recent developments in solution theory.*

C.St J.A. Nash Williams, Reading. *Well-quasi-ordering of graphs and related topic.*

R.E. Grundy, St Andrews. *Non linear diffusion equations.*

V.C.L. Hutson, Sheffield. *Coexistence in biological systems.*

M.J. Taylor, UMIST. *Theta functions and normal intergral bases.*

R.E. Jayne, University College. *Functional analysis/geometry of Banach spaces.*

Round 1 1986/87
Visiting Fellowships
J.R. Willis, Bath. *F.J. Sabina (Mexico), Multiple scattering from arrays of cracks and inclusions.*

J.R. Whiteman, Brunel. *I. Hlavacek (Czechoslovakia), Analysis of finite element methods for elastic plastic deformation.*

M.T. Barlow, Cambridge. *E.A. Perkins (Canada), Stochastic analysis.*

B.D. Sleeman, Dundee. *P.A. Binding, Linear and nonlinear multiparameter Eigenvalue problems.*

B.D. Sleeman, Dundee. *P.J. Browne (Canada), Multiparameter spectral theory.*

C. Kearton, Durham. *J.A. Hillman (Australia), Invariations of knot theory.*

C. Kearton, Durham. *J.M. Montesinos (Spain), Characterisation of the first homology of branched cyclic covers of the 3 sphere.*

P. Chadwick, East Anglia. *T.C.T. Ting (USA), Steady plane anisotropic elastodynamics.*

B. Straughan, Glasgow. *L.E. Payne (USA),Non linear analysis of growth behaviour of solutions to partial differential equations.*

S.J. Pride, Glasgow. *R. Stohr (East Germany), Groups with presentations in which each defining relator involves exactly two generators.*

A.N. Pressley, King's College. *V. Chari,Integrable representations of affine lie algebras.*

C.H. Edwards, Oxford. *G.T. Ruttiman (Switzerland), The geometry of the unit balls of certain complex branch spaces.*

C.J.S. Clarke, Southampton. *P.S. Joshi (India),Causality violation in general relativity.*

Research Grants

J.R. Willis, Bath. *Bounds for the overall properties of nonlinear composite materials.*

A.D. Gardiner, Birmingham. *Symmetric graphs.*

A. Rae, Brunel. *Visit Minnesota to work with Professor T.R. Berger.*

T.J. Pedley, Cambridge. *Numerical solution of time-dependent Navier-Stokes equations.*

C. Kearton, Durham. *Connections of knot theory with algebraic geometry.*

A.R. Camina, East Anglia. *Enumerating non-soluble groups.*

D. Cox, Imperial College. *Asymptotic conditional inference.*

S.C. Power, Lancaster. *Analytic operator algebras.*

J. Brindley, Leeds. *Mathematical models of nonlinear systems.*

A. Truman, J. Hawkes, I.M. Davies, Swansea. *Stochastic mechanics and stochastic processes.*

J.D.S. Jones, Warwick. *k-theory cyclic cohomology and non-commutative differential geometry.*

D.E. Evans, Warwick. *Operator algebras and applications.*

M.M. Dodson, J.A.G. Vickers, York. *Number theory and dynamical systems.*

Round 2 1986/87
Visiting Fellowships

B.W. Silverman, Bath. *G.K. Egeleson (Australia), Variance estimation in nonparametric regression.*

J.R. Willis, Bath. *J.M. Hill (Australia), Studies of stress analysis and diffusion in randomly inhomogeneous nonlinear media.*

J. F. Toland, Bath. *E.N. Dancer, Global bifurcation theory.*

R. Sibson, Bath. *T.C. Brown, Spatial data analysis and modelling and stochastic calculus.*

W.N. Everitt, J. Gunson, Birmingham. *Guanmke-Ying.*

D.H. Peregrine, Bristol. *M. Tanaka (Japan), Unsteady steep water waves.*

D.J.H. Garling, Cambridge. *A. Pelczynski (Poland), Application of branch theory to spaces of smooth functions.*

M.T. Barlow, Cambridge. *R.F. Bass, Stochastic analysis.*

P. Hall, Exeter. *W.D. Larkin (USA), An investigation of Tollmien Schilchting waves and Gortler vortices in steady flows.*

S.J. Pride, Glasgow. *A. Juhasz (Israel),Applications of Van Kampen diagrams.*

D.M. Titterington, Glasgow. *S. Weisberg (USA), Residuals and recursive methods in the analysis of incomplete data.*

J.R. Cash, Imperial College. *J.C. Butcher (New Zealand), An analysis of the existence and computational properties of multistage methods for stiff diferential equations.*

K.S. Stelle, Imperial College. *E. Sokatchev (Bulgaria). Couariant superstrings.*

H.G. Dales, Leeds. *J.R. Esterle (France), Automatic continuity of homorphisms.*

J.F. Watters, Leicester. *K.R. Fuller (USA), Morita context functors, quasiprojectivity and density.*

D.A. Brannan, Open University. *K.F. Barth (USA), The character and properties of tracts of harmonic functions and entire functions.*

D.R. Heath-Brown, Oxford. *A. Balog (Hungary), Analytical number theory – The distribution of primes.*

P.J. Collins, Oxford. *P.J. Nyikos (USA), Problems in set theoretic topology.*

D.B. Abraham, Oxford. *B. Davies (Australia), Quantum inverse method and Bogolubov Valatin transformation in latice statistics.*

J.B. Mcleod, Oxford. *A. Friedman (USA), Nonlinear boundary value problems.*

T.B. Benjamin, Oxford. *M.S. Berger, Applications of functional analysis.*

K.W. Gruenberg, Queen Mary College. *R. Geoghgan, Infinite dimensional group and their homology.*

K.W. Gruenberg, Queen Mary College. *A.W.M. Dress, Group action on metric spaces length functions and cohomology.*

C.M. Series, Warwick. *S. Kator, Hyperbolic geometry and applications to number theory.*

D.E. Evans, Warwick. *A. Kishimoto (Japan), Operator algebras and applications.*

D.B.A. Epstein, Warwick. *R. Penner (USA), Triangulation of Teichmuller space.*

Research Grants

G. Mitra, Brunel. *Computer assisted analysis and modelling of structured problems.*

D.J.H. Garling, Cambridge. *Symposium on the application of branch space theory.*

B.D. Sleeman, Dundee. *9th Dundee Conference on the theory of ordinary and partial differential equations.*

T.H. Lenagan, Edinburgh. *Dimension theory of noncommutative rings and algebras.*

J.R.L. Webb, Glasgow. *Non-linear differential equations and dynamical systems.*

B. Straughan, Glasgow. *Energy stability and convection.*

J.G. Taylor, King's College. *Analysis of higher loop amplitudes for superstrings.*

J.C. Robson, J.C. McConnell, Leeds. *Symposium on noncommtative noetherian rings.*

J.W. Bruce, Newcastle upon Tyne. *Mapping of singular varieties.*

A.D.D. Craik, St Andrews. *Nonlinear stability and wave motion: research visit to Australia.*

N.G. Lloyd, University College of Wales. *Closed orbits of polynominal systems.*

P. Walters, Warwick. *Symposium on coding theory and symbolic dynamics.*

VISIT OF GEORGE GLAUBERMAN

George Glauberman, Professor of Mathematics at the University of Chicago, is to visit the UK for approximately 1½ weeks from 20 June 1987. At the time of going to press details have not yet been fully decided but it is expected that he will lecture at: UMIST or Manchester University on Monday, 22 June (contact Dr Peter Rowley for details); Oxford at 3 p.m. on Tuesday, 23 June (contact Peter M. Neumann for details); Midlands Pure Mathematics Seminar, Birmingham at 3.45 p.m. on Friday, 26 June (contact Prof. D. Livingstone or Dr A.J. Gardiner for details); Cambridge on Monday, 29 June (contact Dr Peter Kropholler for details).

The occasion at Oxford will be a Proctors' cerebration to mark the coferment (on 24 June) of the degree of *D.Sc. honoris causa* upon Professor John G. Thompson.

Professor Glauberman's visit has been made possible by a grant from the London Mathematical Society for which we are most grateful. Members of the Society will of course be welcome at all his lectures. Further details may be obtained from Peter M. Neumann, Queen's College, Oxford OX1 4AW.

COMPUTER SCIENCE COMMITTEE

In October, the LMS Computer Science Committee will be discussing the question of computing facilities for Mathematics Departments, with a view to the possible improvement of grant allocations for this purpose. The Committee would be very gratefull for any information on the existing state of affairs at individual University Departments, including available hardware and software and sources of finance. Details of any causes of dissatisfaction would also be welcome. It may be convenient to subdivide applications into research, wordprocessing and teaching. Please send this information to Dr D.F. Holt, Mathematics Institute, University of Warwick, Coventry, CV4 7AL.

UNIVERSITY AFFILIATIONS PROGRAM

Under the University Affiliations Program, administered by the Bureau of Educational and Cultural Affairs of the United States Information Agency (USIA), grants of up to 50,000 dollars have been made available to facilitate bilateral institutional relationships worldwide with the USA to promote mutual understanding through faculty and staff exchanges. The program, which operates under the auspices of the Fulbright-Hays Program, of Educational Exchange, was instituted in 1984 and three competitions have so far been announced for 1985, 1986, and 1987 respectively.

These competitions are administered centrally in Washington and applications for partnerships have to be initiated by the United States Institution involved. The US-UK Fulbright Commission has been instumental in alerting addressees in the United Kingdom to the existence of this special program but, because of the shortness of notice reaching the Commission here from Washington, such information has only become available to UK institutions a month or so, on each occasion, before the closing date.

To avoid the difficulties caused by this short notice, the Commission has sought advice from Washington on what action can be taken by UK Institutions to promote US-UK university affiliations in advance of the general announcement.

UK Institutions who are interested in pursuing a linkage with an American university under this program are encouraged to take the following steps as soon as possible: (a) Identify a suitable American partner institution; (b) Jointly develop a research and instructional scheme; (c) Encourage the American partner to call Mr W.P. Dant at USIA (202) 485 8489 by September 30 to gain the most up-to-date information regarding the affiliations program; (d) Gain institutional commitment for the program so that the American partner is able to submit a completed proposal by the deadline, which should be the end of the following January.

At this stage, no definite information is yet available on the terms of the program or indeed if it will continue to be funded beyond this year. This will only become clear when an announcement is made from Washington in the autumn.

Algorithms and Combinatorics 1

K. H. Borgwardt, University of Augsburg, Germany

The Simplex Method

A Probabilistic Analysis

1987. 42 figures in 115 separate illustrations.
XI, 268 pages. Soft cover £ 26.00
ISBN 3-540-17096-0

Contents: Introduction. – The Shadow-Vertex Algorithms. – The Average Number of Pivot Steps. – The Polynomiality of the Expected Number of Steps. – Asymptotic Results. – Problems with Nonnegativity Constraints. – Appendix. – References. – Subject Index.

This book is a summary and extension of the prize winning research of the author (Lanchester Prize 1982) on linear programming. Among the main topics are: Why is the Simplex Method so efficient? How can the large gap between worst-case and empirically observed performance of the Simplex Method be explained?
The author was the first to answer these questions that remained challenging open problems for more than thirty years. His results were obtained by analyzing the Simplex Method from a probabilistic point of view.
In this book the author first gives a historical survey of the research on the complexity of the Simplex Method. Then a new geometrical interpretation of the Simplex Method is given, which allows the application of methods from stochastic geometry. These lead to the most important results, such as proofs of polynomiality and proofs of sharp asymptotic bounds for the expected number of pivot steps. The detailed explanation of the material makes the text accessible to all mathematicians and interested scientists.

Algorithms and Combinatorics   *New series!*

Editors: R. L. Graham, B. Korte, L. Lovász

Combinatorial mathematics has substantially influenced recent trends and developments in the theory of algorithms and its applications. Conversely, research on algorithms and their complexity has established new perspectives in discrete mathematics. This new series is devoted to the mathematics of these rapidly growing fields with special emphasis on their mutual interactions.
The series will cover areas in pure and applied mathematics as well as computer science, including: combinatorial and discrete optimization, polyhedral combinatorics, graph theory and its algorithmic aspects, network flows, matroids and their applications, algorithms in number theory, group theory etc., coding theory, algorithmic complexity of combinatorial methods in computer science and related areas.
The main body of this series will be monographs ranging in level from first-year graduate up to advanced state-of-the-art research. The books will be conventionally type-set and bound in hard covers. In new and rapidly growing areas, collections of carefully edited monographic articles are also appropriate for this series. Occasionally there will also be "lecture-notes-type" volumes within the series, published as *Study and Research Texts* in soft cover and camera-ready form. This will be mainly an outlet for seminar notes, drafts of textbooks with essential novelty in their presentation, and preliminary drafts of monographs.
Prospective readers of the series **Algorithms and Combinatorics** include scientists and graduate students working in discrete mathematics, operations research and computer science.

Vol. 1 Borgward, **The Simplex Method**

in preparation:
Vol. 2 Grötschel, Lovász, Schrijver, **Geometric Algorithms**
Vol. 3 Murota, **Systems Analysis by Graphs and Matroids.** Structural Solvability and Controllability
Vol. 4 B. Korte, L. Lovász, R. Schrader, **Greedoids**
Vol. 5 Nèsetřil, (eds.), **Mathematics of Ramsey Theory**
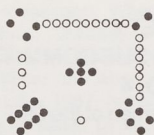Vol. 6 A. Recski, **Matroid Theory and its Applications**

Graphs and Combinatorics

Graphs and Combinatorics is an international journal devoted to research concerning all aspects of combinatorial mathematics. In addition to original research papers and surveys articles, the journal features short communications, research problems, and announcements. Its emphasis on rapid publications makes **Graphs and Combinatorics** an important source of information on current developments in the field as well as an attractive forum for authors with publishable material.

A selection of articles from recent issues:

N. Alon: Decomposition of the Complete r-Graph into Complete r-Partite r-Graphs.

L. Chihara, D. Stanton: Association Schemes and Quadratic Transformations for Orthogonal Polynomials

P. L. Erdös, G. O. H. Katona: Convex Hulls of More-Part Sperner Families

Y. Hong: On the Nonexistence of Nontrivial Perfect e-Codes and Tight $2e$- Designs in Hamming Schemes $H(n, q)$ with $e \geq 3$ and q and $q \geq 3$

Z. Palka: Rulers and Slaves in a Random Social Group

L. Pyper: How to Find Many Counterfeit Coins?

M. Yamada: Hadamard Matrices Generated by an Adaptation of Generalized Quaternion Type Array

F. T. Boesch, H. Prodinger: Spanning Tree Formulas and Chebyshev Polynomials

L. Broere, M. Burger: Uniquely Cocolourable Graphs

A. G. Chetwynd, A. J. W. Hilton: Critical Star Multigraphs

Y. Kajitani, A. Ishizuka, S. Ueno: Characterization of Partial 3-Trees in Terms of Three Structures

J. Nešetřil, V. Rödl: On Sets of Integers with the Schur Property

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THE ROYAL SOCIETY
MATHEMATICAL INSTRUCTION SUBCOMMITTEE
NEWSLETTER NO. 4
by Professor D.G. Crighton, Chairman of the MIS

The MIS has met again, in February, since the last MIS newsletter. It continues to emphasize as one of its primary objectives, the informing of the UK mathematical education community on matters relating to ICMI and, in particular, the forthcoming Congress on mathematical education — ICME-6 — to be held in Budapest in 1988. In particular, the MIS newsletters provide a channel of communication to everyone interested in information or advice on UK participation and contribution at ICME-6.

ICME-6, Budapest, 27 July to 3 August 1988.

The International Programme Committee (IPC) meets next 20-25 July 1987, when further details of the programme for ICME-6 will be ironed out. A revised information sheet has been circulated to everyone on the MIS mailing list (see below) and is available from the Royal Society (address below). It gives the names and addresses of the Chief Organizers (COs) and, where applicable, the UK panel members, of each Action, Theme and Topic group. MIS has so far received brief details from more than 50 potential UK contributors to ICME-6. Forms are available from the Royal Society for further contributions, which will be welcomed. Although MIS will forward everything it receives, including those received after 31 March 1987, to the relevant COs, UK panel members and the IPC, it cannot guarantee that contributions will be accepted. Project proposals can be submitted either direct to the IPC or through the MIS, or both. The deadline for submitting abstracts will appear in the official Second Announceement from the Hungarian Organizers which is due to appear at the end of September 1987. Copies will be sent to everyone on the MIS mailing list.

The survey speakers at ICME-6 are not yet finalized; two are likely to be British. Registration for the congress will probably be in Swiss francs; this will be confirmed in the Second Announcement. An extra day at ICME-6 will be devoted a topic entitled "Mathematics, education and society". This arose from increasing concern about the social status of teachers in general, and of mathematics education in particular. Four broad topic areas have been identified: (i) Mathematics education and culture; (ii) Society and institutional mathematics education; (iii) Educational institutions and the individual learner; (iv) Mathematics education and "the global village".

For further details about the extra day, please contact Dr Alan Bishop, Cambridge University (Tel:(0223) 336290).

Important — please note that everyone who expects to attend ICME-6 should ensure that he/she has registered directly with the Hungarian Organizers. Being on the Royal Society mailing list does not suffice. Details of where and how to register were printed in the First Announcement about the congress which was published widely in mathematics education journals. Copies are available from the Society.

UK planning for ICME-6.

In the last MIS newsletter, we reported on eight possible areas of activity that might interest teachers, which we had identified arising from the series of regional meetings held during 1986. In each case we are aiming to identify a working group of teachers and others, to meet and dicuss their common interest in the UK prior possibly to attending ICME-6. The intention is that those teachers who do attend the congress will have a clearly defined area of interest and substantial participation to follow through within the international context of the congress, whilst also remaining free to follow up other areas of interest in the programme.

The eight areas identified were: (i) *Primary mathematics*. Coordinator: Dr Daphne Kerslake, Bristol Polytechnic (Tel: (0272 741251). (ii) *School-based assessment*. Coordinator: Mr P. Reynolds, Suffolk LEA (Tel: (0473) 55801 ext. 4356). (iii) *Microcomputers and mathematics*. Coordinator: Dr D. Tall, University of Warwick (Tel: (0203) 523523). (iv) *Computer algebra*. Coordinator: Dr D. Hodgkinson, University of Liverpool (Tel: 051-709 6022 ext 3033) (v) *Mechanics in the sixth-form*. Coordinator: Professor D.G. Crighton, Cambridge University (Tel: (0223) 337860). (vi) *Classroom interaction*. Coordinator: Dr Daphne Kerslake (see (i) above). (vii) *Profession of teaching*. Coordinator: Dr D. Woodrow, Manchester Polytechnic (Tel: 061-445 7871). (viii) *Teaching mathematics at ages 16-19*. Coordinator: Mrs C. Knox (Tel: (0742) 301143).

Further details of any of the topic areas are available from the coordinators and those interested should make contact. The workshops are being brought to the attention of the relevant COs with the request that space can be reserved at the Congress. If the workshops go ahead in Budapest, each would occupy a one-hour slot in day 2, 3, 6 or 7 at the Congress, which should provide participants with substantial activity, together with people from other countries, and also time to be involved with other activities.

The eight workshops will form the basis of another series of regional meetings in 1987. Two of the areas of concern would be discussed at each of four meetings, as follows: (i) and (ii) Coordinators: Mr P. Reynolds, Dr Daphne Kerslake. Where and when: The Polytechnic of Central London, Saturday 26 September 1987. (iii) and (iv) Coordina-

tors: Dr D. Tall, Dr D. Hodgkinson. Where and when: Coventry Polytechnic, Saturday 6 June 1987. (v) and (viii) Coordinators: Professor D.G. Crighton, Mrs C. Knox. Where and when: Leeds University, Saturday 3 October 1987. (vi) and (vii) Coordinators: Dr Daphne Kerslake, Dr D. Woodrow. Where and when: Manchester Polytechnic, Saturday 20 June 1987.

Travel expenses of participants will be paid above a prescribed amount, to be determined in accordance with the budget for each meeting (probably costs above about £10/head). Anyone interested in attending these meetings should contact the coordinators in each instance on a first come first served basis.

Finance and travel arrangements for ICME-6.

The MIS is intending to accumulate and manage, as far as possible, a single central fund for ICME-6. In the region of three hundred letters of appeal have been despatched. We are delighted to announce that positive replies, in terms of direct funding, have been received from the General Electric Company plc, Shell International plc, Cambridge University Press, Pembroke College (Oxford), Rolls-Royce plc, Trinity College (Cambridge) and St Hilda's College (Oxford). Offers of assistance have been made for specific categories of participants by Eton College (members of its own mathematics staff) and Channel Television (participants from the Channel Islands). Regrettably, we have also received a large number of refusals from many other organizations. Even a very modest donation from each of them would add up to a sizeable amount! An announcement will appear later this year in the MIS newsletter, and also be distributed to all those on the MIS mailing list, about how and when to apply for help towards travel costs.

We remind potential participants that the central fund is not intended to meet more than a proportion of the total costs of travel, subsistence and registration, and they will still need to raise the major part of cost of travel themselves.

Other activities.

Three conferences are being held in Scotland which may provide opportunities for discussion relating to ICME-6: (i) Scottish Mathematical Council conference in Stirling on Saturday 9 May 1987. Contact Dr D.P. Thomas, Department of Mathematical Sciences, The University, Dundee, DD1 4HN, (Tel: (0382) 23181) for details. (ii) "Mathematics Teaching 1987" in Edinburgh on Thursday 10 — Saturday 12 September 1987. Contact Dr J.W. Searl, Department of Mathematics, University of Edinburgh, Edinburgh, EH9 3JZ (Tel: 031-667 1011) for details. (iii) "Mathematics and statistics curricula in higher education for the 1990s" in Edinburgh on Tuesday 15 — Wednesday 16 September 1987. Contact Mr T.D. Scott, Department of Mathematics, Napier College, Edinburgh, EH14 1DJ (Tel: 031-444 2266) for details.

UK mailing list.

Please write to the address below if you are not already one of the 250 names on the MIS mailing list for information about ICME-6. A number of papers have already been circulated and copies are still available: (a) MIS Newsletter Nos 1, 2and 3. (b) A form for potential contributors to ICME-6. (c) An information sheet containing names and addresses of the COs and UK panel members of the Action, Theme and Topic Groups.

The next MIS newsletter.

The next MIS newsletter will appear after the Second Announcement in September and will include much of the information therein. How and when to apply for travel funds will also be detailed.

For further MIS information or to join the UK mailing list please contact: Jill A. Nelson, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG (Tel: 01-839 5561 ext. 266).

ADVANCES IN RELIABLE NUMERICAL COMPUTATION

A research conference dedicated to the late Dr J.H. Wilkinson FRS will be held at the National Physical Laboratory, Teddington, from 8-10 July 1987, starting at 2.30 p.m. on 8 July. The theme will be advances in reliable numerical computation. Distinguished invited speakers will cover the areas of linear algebra, zeros of functions, error analysis, computer arithmetic and mathematical software, to all of which Dr Wilkinson made major research contributions. The LMS has agreed to support the attendance of a number of postgraduate students at this conference. For further details contact Dr M.G. Cox, Division of Information Technology and Computing, Teddington, Middlesex, TW11 OLW, Telephone: 01 943 6096.

NICOLAS BOURBAKI

The next meeting of the Bourbaki seminar will be at the Institut Henri Poincaré, 11 rue P. et M. Curie, Paris 5, on 20 and 21 June 1987. The programme will be: **Saturday 20 June.** 2.30 p.m. J. Tits, *Le module du "Moonshine" (d'après I. Frenkel, J. Lepowsky et A. Meurman).* 4 p.m. D. Lascar, *Les* *travaux de S. Shelah sur la théorie de la classification.* **Sunday 21 June.** 11 a.m. J.-L. Verdier, *Les groupes quantiques.* 2 p.m. L. Clozel, *Progrès récents vers la classification du dual unitaire des groupes réductifs réels.* 3.30 p.m. C. Margerin, *Fibrés stables et connexions de Hermite-Einstein.*

THE UNIVERSITY OF VERMONT DEPARTMENT OF MATHEMATICS AND STATISTICS CHAIR

Applications are invited for the position of Chairperson of the Department of Mathematics and Statistics at The University of Vermont. The university is seeking a mathematician or statistician with a strong research background, a record of leadership and a commitment to excellence in teaching. The new chairperson will be instrumental in shaping research mathematics, both within the university and in the state of Vermont, by developing the existing strengths of the department as well as fostering interaction with the other scientific and engineering groups in the university, the medical school and industry. This task is expected to include the implementation of a Ph.D. programme and building in the areas of analysis and applied mathematics.

Candidates must possess a doctorate in Mathematics or Statistics, and although all fields of specialization are welcome, preference will be given to candidates in areas best suited to enhance the department's development as outlined above. Salary is competitive and will be commensurate with the candidate's experience. Nominations of, and applications from, qualified female and minority candidates are especially invited. The position will be available beginning June 1st, 1988. The target date for receiving applications is August 31st, 1987; however, applications will be accepted until the position is filled. Nominations and applications (including a resumé listing names, addresses, and phone numbers of at least three references) should be submitted to:

Professor Kenneth I. Golden, Chair
Mathematics and Statistics Search Committee
Office of the Dean, College of Engineering and Mathematics
123 Votey Building
University of Vermont
Burlington, VT 05405

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RAMANUJAN CENTENARY CONFERENCE

(Washington, DC)...A Ramanujan Centenary Conference will be held at the University of Illinois, Urbana, on June 1-5, 1987. Fifty-seven mathematicians and physicists will present 27 principal lectures and 30 shorter talks. Sessions will cover and presenters include:

- Ramanujan's Tau-Function and its Generalizations, R.A. Rankin, University of Glasgow, Scotland.
- Ramanujan's Modular Equations and Approximations to π, J. Borwein, University of Dalhousie, Canada.
- Ramanujan's Continued Fractions, K.G. Ramathan, Tata Institute of Fundemental Research, Bombay, India.
- Ramanujan's "Lost" Notebook and the Mock Theta Conjectures, G.E. Andrews, Pennsylvania State University, USA.
- The Bailey Lattice, D. Bressoud, Pennsylvania State University, USA.
- Congruence Properties of Partitions, F.J. Dyson, Institute for Advanced Study, Princeton, New Jersey, USA.
- Combinatorial Interpretations of Ramanujan's Congruences for Partitions, F. Garvan, University of Wisconsin, USA.
- Approximations and Complex Multiplication according to Ramanujan, G. Chudnovsky, Columbia University, NY, USA.
- H. Delange, University of Paris, Orsay, France.
- On Highly Composite Numbers, J.L. Nicolas, University of Limoges, France.
- Carl Pomerance, University of Georgia, USA.
- P. Swinnerton-Dyer, Cambridge University, England.
- The Ramanujan Tau Function, R. Ram Murty, McGill University, Montreal, Canada.
- R.J. Baxter, Australian National University, Canberra, Australia.
- Euler Products, Modular Identities and Elliptic Integrals in Ramanujan's Manuscripts (I & II), S. Raghavan and S.S. Rangachari, Tata Institute of Fundamental Research, Bombay, India.
- G. Viennot, University of Bordeaux, France.
- On the Number of Prime Factors of an Integer, A. Hildebrand, University of Illinois, Urbana, USA.
- C. Moreno, City University of New York, USA.
- Ramanujan's Modular Equations, B.C. Berndt, University of Illinois, Urbana, USA.
- q-Lagrange Inversion and the Rogers-Ramanujan Identities, D. Stanton, University of Minnesota, Minneapolis, USA.
- Asymptotic Expansions from Ramanujan's Second Notebook, R.J. Evans, University of California – San Diego, La Jolla, USA.
- Multiple q-Series and U(n) Generalizations of Ramanujan's Ψ Sum, S.C. Milne, University of Kentucky, Lexington, KY, USA.
- Beta Integrals and Related Orthogonal Polynomials, R.A. Askey, University of Wisconsin, Madison, WI, USA.
- Selberg Integral and its Correlation Functions, K. Aomoto, University of Nagoya, Nagoya, Japan.
- K. Kadell, Arizona State University, Tempe, AZ, USA.
- Public Lecture: Star Wars and All That, F.J. Dyson, Institute for Advanced Studies, Princeton, NJ, USA.

This meeting is supported by grants from the G.A. Miller Committee, the James M. Vaughn Foundation, the Institute for Mathematics and its Applications at the University of Minnesota, and the National Science Foundation.

Srinivasa Ramanujan was born in India in 1887 and died in 1920 at the age of 32. He attended college at Kumbakonam, India, for only 1 year because he lost his scholarship by flunking English.

In the early 1900s Ramanujan had access to 5 outdated mathematics textbooks but, nonetheless, was able to compete with mathematicians on a worldwide basis. He wrote to G.H. Hardy, a mathematics professor at Trinity College in Cambridge, and Hardy arranged for Ramanujan to study in England.

From 1914-19 Ramanujan worked at Cambridge, although he was seriously ill for the last two years. Hoping for a return to good health, Ramanujan went back to India. However, he died within a year.

About ten years ago a mathematician from Pennsylvania State University, George Andrews, located over 100 items originated by Ramanujan during his last year at Cambridge. They constitute a major find and indicate that his mathematics capabilities were increasing at a phenomenal rate even though his health was declining.

At the time of Ramanujan's death, G.H. Hardy felt it was too early to assess where he fitted in mathematics. We are now only realizing the importance of some of his work. And while his native abilities put him at the absolute top of mathematics, it is interesting to note that he was hampered because of his educational shortcomings.

DR MARSTON CONDER

Dr. Conder's research interests lie in the areas of symmetric graphs and maps on surfaces. He will be visiting Oxford and RHBNC (London) 16th-23rd June, Birmingham 24th-28th June, Southampton 18th-25th July, and is expected to give the following talks: Oxford, 16th June; RHBNC, 19th June; Birmingham, 26th June; Southampton, 18th-25th July. For further details of each talk contact Dan Segal (Oxford), Peter Wild (RHBNC), Tony Gardiner (Birmingham), David Singerman (Southampton), nearer the relevant date.

UNIVERSITY OF WARWICK
Mathematics Institute
Research Fellowship in Nonlinear Systems

Applications are invited for a three year fellowship in the Nonlinear Systems Laboratory (NSL). Preference will be given to candidates with research interests in an area of Nonlinear Dynamics, Partial Differential Equations or Variational Problems.

The NSL, which is part of the Mathematics Department, is starting a small-scale experimental laboratory under Dr. G.P. King, and running visitor programmes including a major symposium on Nonlinear Dynamics and Strange Attractors during 87/88 and a symposium on Experimental Applications of Dynamical Sytems Theory during 88/89. The NSL has its own computing facilities.

Starting salary on the RA 1A scale: £9305 − £14,825 p.a. (depending on age and experience)

Starting date: 1 October 1987

Closing date for applicants: 15 May 1987

Applications should be sent to Prof. D.A. Rand or Dr. R.S. MacKay, Nonlinear Systems Laboratory, Mathematics Institute, University of Warwick, Coventry CV4 7AL, including curriculum vitae, publication list, names and addresses of three referees, and a one page research proposal.

UNIVERSITY OF EXETER
Temporary Lectureship in Pure Mathematics

Applications are invited for the above post tenable from 1 October 1987 (for a period of one year). Preference will be given to candidates who have a research capability in an area of pure mathematics closely related to interests of the department: theory of rings and modules, commutative algebra, number theory, Abelian groups, combinatorics and computer graphics.

Salary will be in the range £8735 − £11,015 p.a. with placement according to age and experience.

Further particulars are available from the Personnel Office, University of Exeter, EX4 4QJ, to whom applications (6 copies, applicants resident overseas − one copy) giving the names and addresses of 3 referees should be sent by 23 June 1987 quoting reference number 3577.

NORTH BRITISH FUNCTIONAL ANALYSIS SEMINAR

Professor T.W. Gamelin
(University of California, Los Angeles)
Tight algebras
and
Algebras of analytic functions on Banach spaces
Monday, 1st June, 1987 at 2.30 p.m. and 4.00 p.m.
Tea will be served at 3.30 p.m.
and
Professor M. Thomas
(California State College, Bakersfield)
Derivations and radical Banach algebras
Tuesday, 2nd June, 1987 at 10.00 a.m.
and
Professor R. Longo
(University of Rome)
The joint modular structure of an inclusion of von Neumann algebras
Tuesday, 2nd June, 1987 at 11.30 a.m.
Coffee will be served at 11.00 a.m.
All lectures are in
Lecture Hall B, David Hume Tower, George Square, Edinburgh

APPLIED MATHEMATICIANS TO HOLD INTERNATIONAL MEETING

(Washington, DC)...Applied mathematicians will convene on a worldwide basis for the first time from June 29 to July 3 at the First Internationa l Conference on Industrial and Applied Mathematics — 'ICIAM87 — in Paris, France. ICIAM 87 marks the first time that the commonality of applied mathematics will be placed on view for an international audience.

Over one thousand papers from 56 countries are scheduled along with 69 minisymposia, each featuring 3 or 4 speakers.

Four organizations are sponsoring ICIAM 87 — The Society for Industrial and Applied Mathematics in Philadelphia, PA; Société de Mathématiques Appliquées et Industrielles, Palaiseau, France; Gesellschaft für Angewandte Mathematik und Mechanik, Hamburg, Germany; and Institute of Mathematics and its Applications, Southend on Sea, Essex, Great Britain.

Invited presentations will cover the following topics:

- Vortex Dynamics — The Interaction of Numerical Analysis, Scientific Computing and Mathematical Theory, Andrew J. Majda, Princeton University, USA.
- Numerical Flow Simulation in Aerospace Industry, P. Perrier, Aerodynamic Department, Avions Marcel Dassault/Bréguet Aviation, Saint-cloud, France.
- Aeronautical Acoustics — Mathematics Applied to a Major Industrial Problem, D.G. Crighton, Dept. of Applied Mathematics and Theoretical Physics, Cambridge University, United Kingdom.
- What is a Multivariate Spline?, Carl de Boor, University of Wisconsin, USA.
- Topology and Differential Equations, Michael Atiyah, Oxford University, United Kingdom.
- Modelling of Mobility in Biological Systems, W.

Alt, Universität Bonn, Federal Republic of Germany.
- Stochastic Processes and Image Analysis, R. Azencott, Université Paris-Sud, Orsay, France.
- Stochastic Control Theory, K.J. Aström, Department of Automatic Control, Lund Institute of Technology, Lund, Sweden.
- Algorithms for Nonlinear Equations and Unconstrained Optimization, M.J.D. Powell, University of Cambridge, United Kindgdom.
- The Multi-Grid Method: Algorithm, Software and New Developments, W. Hackbusch, Christian Albrechts University, Kiel, Federal Republic of Germany.
- Model Driven Simulation, J. Hopcroft, Cornell University, Ithaca, NY, Usa.
- Lattices and Algorithms, Lászlò Lovàsz, Mathematical Institute, Eötvös Lorand University, Budapest, Hungary.
- Mathematical Modelling and numerical Analysis of Problems with One or Several Small Parameters in Solid Mechanics, Philippe G. Ciarlet, Université Pierre et Marie Curie, Paris, France.
- Mathematics and Computing, P.D. Lax, Courant Institute of Mathematical Sciences, New York University, USA.
- Mathematics and Tomography, F. Natterer, Westfalische Willems University, Munster, Federal Republic of Germany.
- On a Duality Relation in the Theory of Orthogonal Polynomials and its applications in Signal Processing, Y. Genin, Philips Research Laboratory, Brussels, Belgium.

Conference presentations are divided into seven major catergories: Applied Mathematica l Analysis, Scientific Computing, Control Theory and Signal Processing, Discrete Mathematics, Applied Probability and Statistics, Mathematics of Natural Sciences, and Software and Hardware Aspects.

BAIL V CONFERENCE

The Fifth International Conference on Boundary and Interior Layers — Computational and Asymptotic Methods will be held from 20-24 June 1988 in Shanghai, China under the auspices of the Science and Technology University of Shanghai, the Science and Technology University of China, Hofei, the Institute of Applied Physics and Computational Mathematics, Beijing and the Shaghai Institute of Applied Mathematics and Mechanics and co-chaired by Professor Guo Benyu (Shanghai), Professor John Miller (Dublin) and Professor Shi Zhong-ci (Hofei).

This conference provides a forum for the discussion of numerical or asymtopic methods for the solution of problems involving boundary or interior layers. It will therefore be of interest to biologists, chemists, engineers, mathematicians and physicists concerned with such phenomena. Topics of relevance include stiff systems of ordinary differential equations, numerical and asymtopic methods for boundary and interior lay-

ers, singular perturbations, shocks, multiphase problems, solitary waves. bifurcation, chaos and singular perturbations in control theory.

The following have been invited to give keynote lectures: Ivo Babushka (University of Maryland, College Park),Chien Wei-Zang (Technology University of Shanghai), Feng Kang (Computing Centre of Chinese Academy, Beijing), Han Hou-de (Tsinghua University, Beijing), P.V. Kokotovic (University of Illinois, Urbana), Jean-Claude Le Balleur (ONERA, Chatillon-sur-Bagneux)¨ V.P. Maslov (Academy of Sciences, Moscow), R.E. O'Malley (Rehsselaer Polytechnic Institute, Troy), Martin Stynes (University College, Cork), Masaya Yamaguti (University of Kyoto).

For further details please write to: Paulene McKeever, Conference Management Services, P.O. Box 5, 51 Sandycove Road, Dún Laoghaire, Co. Dublin, Ireland.

MERTON COLLEGE OXFORD

Fellowship and Tutorship in Mathematics

The college proposes to elect an official Fellow and Tutor in Mathematics , with effect from 1st October 1988, or possibly earlier, by arrangement. The person appointed will be required to give tuition in Pure Mathematics for the Final Honour Schools of Mathematics , Mathematics & Philosophy and Mathematics & Computation. The title of University Lecturer (C.U.F.) may be conferred upon the holder of the fellowship; the full stipend associated with such a lecturership will be met by the college. The title may at a later date (though the University has no commitment to do so) be converted into a stipendiary University post.

Applications should be sent to the Warden, with details of career and publications and names of three referees, not later than **Friday 25 September 1987**. Further particulars may be obtained from the Warden's secretary.

NUMERICAL MATHEMATICS, SINGAPORE

The International Conference on Numerical Mathematics, Singapore is organized jointly by the Department of Mathematics of the National University of Singapore and the Singapore Mathematical Society, and is expected to be sponsored by the Southeast Asian Mathematical Society. The Conference will be held at the National University of Singapore from 30 May to 3 June 1988.

The main purpose of the conference will be that of providing an up-to-date description of the present status and future prospects for research and application on Numerical Mathematics.

Speakers who have tentatively accepted invitations to give one-hour survey talks and 30-minute talks will include (in alphabetical order):

Asia & Australia
Lee S.L., Mori M., Sloan I.H., Yamamoto T.

Canada
Russell R.D., Sharman A., Stanton R.G.

Europe
Baker C.T.H. Brezinski C., Bulirsch R., Butzer P.L., Ciarlet P.G., Collatz L., Elliot E.M., Erdös P., Gatteschi L., Hadjidamos A., Hansen P.C., Kress R., Mattheij R.J.M., Nickel K., Niethammer D.W., Stetter H.J., Thomee V., Twizell E.H., van der Houwen P.J., Wait R.

U.S.A.
Babuska I., Glowinski R., Golub G.H., Gragg W.B., Greenspan D., Isaacson E., Iserles A., Keller H.B., Kreiss H.O., Lakshmikantham V., Lambert J.P., Meyer G.H., Micchelli C., Parlett B.N., Pereyra V., Rall L.B., Scott M., Shampine L.F., Smale S.

S. America
Lentini M.

Further details may be obtained from The Secretary, I.C.N.M.S., Department of Mathematics, National University of Singapore, Kent Ridge, Republic of Singapore 0511.

THE AUSTRALIAN NATIONAL UNIVERSITY

Applications are invited from suitably qualified women and men for appointment to the position of POSTDOCTORAL FELLOW / RESEARCH FELLOW in the DEPARTMENT OF MATHEMATICS, RESEARCH SCHOOL OF PHYSICAL SCIENCES.

The Department of Mathematics (Head: Professor D.W. Robinson (FAA)) carries out research in several areas, namely operator Algebras; Semigroups and Mathematical Physics; Partial Differential Equations and Geometry; Foundations; Lie Groups and Algebraic Groups; Ordinary Differential Equations and Control Theory; Fuctional Analysis; Group Theory.

Closing date 31 July 1987. Ref: PS. 9.4.1. Salary will be in accordance with qualifications and experience within the range: Postdoctoral Fellow Grade 1 (at a fixed point) A$24,013 -27,507 p.a.; Research Fellow A$27,859 − 36,600 p.a. Appointment will be: Research Fellow normally up to three years with the possibility of extension to maximum of five years; Postdoctoral Fellow normally two years, with the possibility of extension to maximum of three years. Superannuation,maternity leave and assistance with travel available. The University reserves the right not to make an appointment or to make an appointment by invitation at any time. Applicants should quote the reference number when submitting applications to R.V. Dubs, Registrar, GPO Box 4, Canberra, ACT, 2601 Australia.

THE UNIVERSITY IS AN EQUAL OPPORTUNITY EMPLOYER.