

THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 168

January 1990

FORTHCOMING SOCIETY MEETINGS

Friday 19 January 1990, Burlington House

G. Horrocks, P.M.H. Wilson

Friday 16 February 1990, Bath

Friday 16 March 1990, Burlington House

Friday, Saturday, 18-19 May 1990, Sheffield

Friday 15 June 1990, Burlington House

Friday 19 October 1990, Burlington House

Friday 16 November 1990, Burlington House

TREASURER'S REPORT ANNUAL GENERAL MEETING

The Society's investments have performed satisfactorily over the last twelve months. Our publications income has remained almost static. Volatile exchange rates remain a major difficulty.

The new journal, "Nonlinearity", is a resounding success academically. Our loss this year (£5.6K) is less than originally anticipated. The total cost to the Society attributed to Nonlinearity is £18K.

Last summer the Council of the Society agreed that if the proposed Isaac Newton International Mathematical Sciences Institute was to come into being, then the Society would donate £20K towards the initial costs and would allocate £10K per year for five years to enable mathematicians

from other parts of the United Kingdom to visit the Institute and take part in its work. Since that decision was taken, other proposals for mathematical research institutes have come forward. Council believes that the creation, within the United Kingdom, of international research institutes in mathematics would be of great benefit to the whole mathematical community and should be strongly encouraged by the Society.

On the advice of the auditors, £200K has been added to the printing reserve. As detailed in the accounts, the General Fund has grown satisfactorily. When adjusted for 8% inflation, it has increased by £177K.

GEORGE C. STEWARD

Professor George C. Steward who was elected a member of the London Mathematical Society on 15th December 1921, died at the age of 93 on 19th

November 1989. A Fellow of Gonville and Caius College 1922; Fellow of Emmanuel College 1923; Professor of Mathematics Hull University 1930-61.

ANNUAL LMS SUBSCRIPTION

The Society is appreciative of those members who have paid their 1989/90 subscriptions. May we remind those who have not yet paid, subscriptions were due on 1st November 1989. The Society reserves the right to discontinue the supply of periodicals and Newsletters to members whose

subscription remains unpaid by 31st January 1990. If you have misplaced your renewal of subscription form, contact the Administrator, Susan Oakes at the LMS office. Telephone 01-437 5377. E-mail lms@uk.ac.kcl.cc.oak.

BOOKS FOR SALE

A collection of more than 500 mathematics books are for sale. Most are on pure mathematics, with a few on applied mathematics and physics, and with dates ranging from early 19th century to 1989. If you would like a copy of the list, write to Dr

A.N. Pressley, 40 Millway Close, Upper Wolvercote, Oxford OX2 8BL. Telephone (0865) 515343, or if no reply (0742) 485079. E-mail udah207@uk.ac.kcl.cc.oak.

LONDON MATHEMATICAL SOCIETY

COUNCIL, COMMITTEES AND REPRESENTATIVES, 1990

PRESIDENT: J.H. Coates.

VICE-PRESIDENTS: E.C. Lance, R.L.E. Schwarzenberger.

TREASURER: J.D.M. Wright

COUNCIL AND GENERAL SECRETARY: R.Y. Sharp.

MEETINGS AND MEMBERSHIP SECRETARY: A.R. Pears.

PUBLICATIONS SECRETARY: D.A. Brannan.

LIBRARIAN: J.A. Erdos.

MEMBERS-AT-LARGE OF COUNCIL: J.W. Bruce, D.G. Crighton, S.K. Donaldson, W.D. Evans, P. Holgate, J.M. Howie, C.J. Mulvey, P.M. Neumann, E.G. Rees, C.M. Series, P. Vámos, N.J. Young.

CO-OPTED MEMBERS OF COUNCIL: W.A. Hodges (Chairman of Computer Science Committee), Sir J.F.C. Kingman (President-Designate), P.A. Samet (recent Librarian)

GENERAL PURPOSES COMMITTEE: President (Chairman), Council and General Secretary (Secretary), Treasurer, Meetings and Membership Secretary, Publications Secretary.

FINANCE COMMITTEE: Treasurer (Convenor), President, Publications Secretary, R.L.E. Schwarzenberger, R.Y. Sharp.

PROGRAMME COMMITTEE: President (Chairman), Meetings and Membership Secretary (Secretary), D.G. Crighton, P.M. Neumann, E.G. Rees, J.D.M. Wright, N.J. Young.

1990 PRIZES COMMITTEE: J.H. Coates (Convenor), D.G. Crighton, S.K. Donaldson, J.A. Green, E.C. Lance.

PUBLICATIONS COMMITTEE: Publications Secretary (Convenor), Joint Editors of Bulletin, Journal, and Proceedings, LMS-nominated Editor of Nonlinearity, Book Reviews Editor, E.B. Davies (Books), E.C. Lance (Council).

DURHAM SYMPOSIA COMMITTEE: P.M. Neumann (Chairman) (90-94), P.J. Higgins (Secretary, *ex-officio*), E.C. Lance (Council), E.L. Albasiny (87-91), B.J. Birch (88-92), C.J. Isham (88-92), N. Riley (89-93).

EDUCATION COMMITTEE: R.L.E. Schwarzenberger (Chairman) (90-94), J.W. Bruce (Council), B. Baumslag (90), S. Burns (90), A.R. Camina (90), P. Holgate (90-91), J.M. Howie (90-91), I.R. Porteous (90), T. Porter (90-91), J.C. Robson (90).

COMPUTER SCIENCE COMMITTEE: W.A. Hodges (Chairman) (90-94), D.F. Holt (Secretary) (85-90), P.A. Samet (Council), S. Abramsky (87-91), D.J. Cooke (89-93), J.M.E. Hyland (89-93) N.M. Stephens (90-94), S.S. Wainer (87-90).

EUROPEAN MATHEMATICAL COUNCIL: J.H. Coates (87-91).

EUROMATH COORDINATING COMMITTEE: A.R. Pears (87-91).

BRITISH MATHEMATICAL COLLOQUIUM COMMITTEE: President, Meetings and Membership Secretary.

JOINT MATHEMATICAL COUNCIL: I.R. Porteous (90; previously *ex-officio*).

ROYAL SOCIETY MATHEMATICS CURRICULUM SUBCOMMITTEE: E.C. Lance (89-91), R.L.E. Schwarzenberger (89-91).

ROYAL SOCIETY MATHEMATICS INSTRUCTION SUBCOMMITTEE: N.L. Biggs (89-92).

CAMBRIDGE MATH. SCI. RESEARCH INST. PLANNING COMMITTEE: J.D.M. Wright.

BRITISH ASS. FOR THE ADVANCEMENT OF SCIENCE, MATH. COMMITTEE: N.H. Bingham (86-91).

NOTTINGHAM CONFERENCES ORGANIZING COMMITTEE: J.M. Howie (83-92).

SAVE BRITISH SCIENCE EXECUTIVE COMMITTEE: I.N. Stewart (89-94).

SCIENCE MUSEUM MATHEMATICS ADVISORY PANEL: N.L. Biggs (88-92), J.J. Gray (88-92), P. Holgate (88-92), J.M. Jagger (88-92), I.R. Porteous (88-92).

TRUSTEE, APPLIED PROBABILITY TRUST: R.A. Bailey (88-92).

WARWICK MATHEMATICS RESEARCH CENTRE, ADVISORY BOARD: K.W. Gruenberg (01.10.87 - 30.09.90).

COLLINGWOOD PRIZE COMMITTEE: A.J. Scholl.

R.Y. Sharp
Council and General Secretary

LONDON MATHEMATICAL SOCIETY

G. Horrocks (Newcastle upon Tyne)

Vector Bundles and Projective Modules

P.M.H. Wilson (Cambridge)

Kähler Classes and Rational Curves
on Calabi-Yau Manifolds

Friday 19th January 1990

at 3.30 p.m.

The meeting is at the Geological Society,
Burlington House, Piccadilly, London W1

All interested are very welcome

Tea will be served at 4.30 pm

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 three 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. Grants under this scheme do not normally exceed £250. The Society believes the scheme to be very useful and made grants to the total value of about £3000 in the last financial year.

3. Financial Support for Conferences

Grants are made for the Programme and Conference Fund to the organizers of conferences to be held in the UK. Programme Committee tends to give priority to the support of small 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 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.

The following grants for support of conferences have been made within the past three months: £150 to N.L. Biggs for '*Combinatorics and Connectionism*' held at the London School of Economics in December 1989; £1000 to J.G. Taylor for '*Neural Computing 1990*' to be held at King's College London in April 1990; £780 to J.B. Fountain for '*Monoids and Formal Languages*' to be held at York in April 1990; £720 to R.W. Bray for '*The Uses of History in Mathematics Education*' to be held at Leicester in April 1990.

Further information about these functions of Programme Committee can be obtained from the Meetings and Membership Secretary, A.R. Pears, Department of Mathematics, King's College London, Strand, London WC2R 2LS, telephone 01-873-2852, who will be pleased to discuss proposals informally with potential applicants and to give advice on submission of an application to the Society. The next meeting of Programme Committee will be held in February and it would be a great help if suggestions and applications to be considered at that meeting could be submitted not later than 31 January 1990.

SAVE BRITISH MATHEMATICS

I have taken over from Christopher Zeeman as LMS representative on the Committee of 'Save British Science' until 1994. As you will be aware, this society is a pressure-group whose main aim is to increase government funding for scientific research.

I intend to compile a report on the effects of current funding levels on research in mathematics, both pure and applied. I would like to hear of any personal experiences bearing on this; for example research proposals given alpha grades but not funded, good young mathematicians 'lost' because of lack of postdoctoral positions, research that cannot be carried out because of lack of computing or other equipment, and so on. I am also interested in hearing of difficulties in making appointments due to low salaries, and of resignations by members of staff, temporary or permanent, who have left to take up a position abroad. In the interests of fairness I also invite expressions of opinion, including the opinions that current funding levels are adequate or indeed excessive.

It would be helpful to have as much relevant detail as possible - names, dates, places, amounts. I will keep such information confidential and any ensuing report will be written in such a manner that individuals cannot easily be identified.

Much of the funding of mathematics is based on norms that were established thirty years ago. The subject is changing rapidly but the funding structure is responding more slowly. Comments on ways in which that structure could be improved, with or without extra funds, are also welcome.

I am taking steps to have this notice circulated among the 'applied' mathematics community as well as the 'pure' community which constitutes much of the LMS membership, and I would appreciate it being passed on to colleagues who are not LMS members.

Please send all communications to Dr Ian Stewart, Mathematics Institute, University of Warwick, Coventry CV4 7AL.

Ian Stewart

REMINDER INTERNATIONAL CONGRESS OF MATHEMATICIANS APPLICATIONS FOR TRAVEL GRANTS

In the November issue of the LMS Newsletter (No.166) details were given of travel grants available for attending the above Congress. Members are reminded that completed applications should be sent to arrive no later than 31st January 1990. Application forms may be obtained from Miss B.M. de Vere, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG. Telephone 01-839 5561 ext.222.

Members may like to know that a package tour

for the Congress is being arranged by Status Meetings Ltd, Festival Hall, Petersfield, Hants GU31 4JW. Telephone 0703 66544. It is emphasized that any bookings made are the member's individual responsibility and that no liability can be accepted by either the Royal Society or the London Mathematical Society. Furthermore, the appearance of this announcement in the LMS Newsletter should not be interpreted as a recommendation by the LMS of the particular package mentioned.

NEURAL COMPUTING MEETING CALL FOR PAPERS

The British Neural Network Society is organising a meeting on Neural Computing at the Queen Elizabeth Hall, King's College London Kensington Campus, Campden Hill Road, London W8 7AH from 18th to 20th April 1990.

Day 1 Guest Speaker: Professor S. Grossberg (Boston) *Neural Nets for Learning and Memory of Cognitive Recognition Codes.*

Tutorials: *Dynamical Systems and Neural Networks* (J.G. Taylor); *Neuronal Modelling* (C.L.T. Mannion); *Kohonen Maps* (N. Allinson).

Day 2 Contributed papers (abstracts by 20th January 1990)

Day 3 Guest Speakers: Professor T. Kohonen (Helsinki) *The Self Organising Map*; Professor K.E. Kurten (Koln) *Quasi-Optimized Learn-*

ing Dynamics in Sparsely Connected Neural Network Models; Dr A. Mayes (Manchester) *Nature of the Functional Loss in Amnesia: Possible Role for a Highly Structured Neural Network*; Professor H. Barlow (Cambridge); Professor R. Cotterill (Copenhagen) titles to be announced.

For further information contact: Professor J.G. Taylor, Department of Mathematics, King's College, London WC2R 2LS. Telephone 01-873 2213; e-mail udah057@uk.ac.kcl.cc.ash; fax 01-836 1799. Dr C.L.T. Mannion, Department of Electrical Engineering, University of Surrey, Guildford, Surrey GU2 5XH. Telephone 0483 571281 x 2304; fax 0483 34139; e-mail conal@cs.surrey.ac.uk.

This meeting is receiving financial support from the London Mathematical Society.

SYMPOSIUM ON THE INVERSE GALOIS PROBLEM

A symposium will be held in Oxford from 8th - 11th April, 1990, to coincide with Walter Feit's arrival for a two month visit. The aim of the symposium will be to survey what has been achieved and where future work should be directed on the Inverse Galois Problem.

Walter Feit will give a series of talks; other speakers will include B.H. Matzat, G. Malle, J.-P.

Serre and J.G. Thompson. The afternoon of Wednesday 11th will be devoted to lectures in honour of Walter Feit; speakers will include L.L. Scott and J.A. Green.

Further information and registration forms can be obtained from Dr M.J. Collins, Mathematical Institute, Oxford University, 24-29 St. Giles', Oxford, OX1 3LB. Early application is requested.

BRITISH COLLOQUIUM FOR THEORETICAL COMPUTER SCIENCE

The sixth British Colloquium for Theoretical Computer Science (BCTCS) will take place at the University of Manchester, beginning on the morning of Wednesday 28th March and ending at lunchtime on Friday 30th March.

The colloquium aims to provide a forum for theoreticians to learn of new developments in areas including Logic and Semantics of Programs, Formal Methods, Term Rewriting, Specification and Verification, Logic and Functional Programming, Data Structures, Algorithms and Complexity, Computational Algebra, Cryptography, Parallel Computation and Models of Concurrency, Formal Languages and Type Theories, and Artificial Intelligence. The meeting is informal and provides an opportunity to exchange ideas with colleagues and research students.

There will be a number of invited speakers who will provide survey talks covering a range of interests in theoretical computer science. These

invited contributions will be complemented by shorter, specialist talks.

A registration form will be sent out in the New Year; at the same time, offers of contributed specialist talks will be sought. Those who wish to have their names added to the mailing list should forward an address to: BCTCS6, Department of Computer Science, University of Manchester, Manchester M13 9L, U.K. E-mail JANET: bctcs6@uk.ac.man.cs BITNET: bctcs6@cs.man.ac.uk ARPA: bctcs6@cs.man.ac.uk or bctcs6%cs.man.ac.uk@nsfnw-relay.ac.uk.

Organising Committee: John Tucker (Swansea), Mark Jerrum (Edinburgh), John Shawe-Taylor (R.H.B.N.C.), David Rydeheard (Manchester), Paul Dunne (Liverpool), Mike Paterson (Warwick), Ben Thompson (Swansea), Alan Gibbons (Warwick), Harold Simmons (Aberdeen).
Local Committee: John Fitzgerald, Graham Gough, Jané Gray and David Rydeheard.

VACANCES DE POSTES

L'Université Louis Pasteur de Strasbourg mettra au concours en janvier 1990
deux postes de professeurs de mathématique

L'un de ces postes porte le profil: Analyse Pure ou Appliquée; l'autre est ouvert à toutes les branches des mathématiques pures et appliquées, y compris l'analyse.

Les personnes intéressées à poser leur candidature à l'un de ces deux postes sont invitées à envoyer dès maintenant un dossier préliminaire de candidature, comportant un curriculum vitae détaillé et une liste de publications, à l'adresse suivante:

**M. le Président de la Commission de Spécialistes de mathématique,
Département de mathématique, Université Louis Pasteur,
7, rue René-Descartes, F-67084 Strasbourg.**

Tel: (33) 88 41 63 00 Fax: (33) 88 61 90 69 Email: a18636@frccsc21.bitnet

Chaque candidat est par ailleurs invité à faire envoyer à l'adresse précédente trois lettres de recommandation écrites par des mathématiciens ayant une bonne connaissance de ses travaux.

Il sera donné accusé réception de chaque dossier de candidature et dès le 15 janvier 1990, le candidat recevra les indications précises des modalités du dépôt de la candidature officielle.

Les candidats qui seront retenus par ce concours prendront leur poste le 1er octobre 1990.

RECENT LMS PUBLICATIONS

Analysis at Urbana Vol. 1. Analysis in Function Spaces; Vol. 2. Analysis in Abstract Spaces. Edited by E. Berkson, T. Peck and J. Uhl

Throughout the academic year 1986-87, the University of Illinois was host to a symposium on mathematical analysis which was attended by some of the leading figures in the field. This book arises out of this special year and lays emphasis on the synthesis of modern and classical analysis at the current frontiers of knowledge. The contributed articles by the participants cover the whole range of mainstream topics. This book will be essential to researchers in mathematical analysis.

LMS Lecture Notes Series No. 137 Vol. 1. LMS members discount price £16.88.

LMS Lecture Notes Series No.138. Vol.2 LMS members discount price £15.00.

Geometric Aspects of Banach Spaces. Edited by E. Martin Peinador and A. Rodes-Usan

This volume, dedicated to Professor A. Plans, concentrates on some important and contemporary themes in Banach space theory. The articles are by leading researchers and cover topics such as sequences, operators, eigenvalues, s-numbers and projection constants, and so will be of interest to functional analysts and approximation theorists.

LMS Lecture Notes Series No.140. LMS members discount price £11.25.

Surveys in Combinatorics, 1989. Edited by J. Siemons

This volume contains the invited lectures given at the 12th British Combinatorial Conference. The lectures survey many areas of current research activity in combinatorics and its applications, including graph theory, designs and probabilistic graphs. This book provides a valuable survey of the present status of knowledge in combinatorics for mathematicians, computer scientists and engineers.

LMS Lecture Notes Series No.141. LMS members discount price £13.13.

VISIT OF PROFESSOR JOHN GRAY

Professor John W. Gray of the University of Illinois at Urbana Champaign will be visiting the United Kingdom from 8th January for four weeks. He will be lecturing on applications of categories in computer science in Edinburgh on 16th January, in Manchester on 18th January, in Cambridge on 24th January and at Imperial College on 31st January.

Available 1979-89 issues of American Math. Monthly, Two Year Colleges Math. Journal, currently superseded by Colleges Math. Journal, also American Scientist. Free to first claimant willing to

Undergraduate Algebraic Geometry by M. Reid.

Algebraic geometry is the study of locuses defined by polynomial equations; it occupies a central position in mathematics and in modern applications to mathematical physics. This short readable introduction arises from an undergraduate course at the University of Warwick, and will be ideal for undergraduate mathematicians coming to the subject for the first time, and also for specialists in other disciplines put off by more abstract treatments.

LMS Student Texts Series No.12. LMS members discount price £16.88 hard cover; £5.96 paperback.

An Introduction to Hankel Operators by J.R. Partington

Hankel operators are of wide application in mathematics (functional analysis, operator theory, approximation theory) and engineering (control theory, systems analysis) and this is the first account of them that is both elementary and rigorous.

The book is based on graduate lectures given to an audience of mathematicians and control engineers, but to make it self-contained the author has included several appendices on mathematical topics unlikely to be met by undergraduate engineers. The main prerequisites are basic complex analysis and some functional analysis, but the presentation is kept straightforward, avoiding unnecessary technicalities so that the fundamental results and their applications are evident. Some 45 exercises are included.

LMS Student Texts Series No.13. LMS members discount price £16.88 hard cover; £5.96 paperback.

These books have recently been published and are available from Cambridge University Press, Customer Services, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU. Payment should be sent with your order quoting Account Number 089 4900 001.

For further information contact Andrew Pitts, University of Cambridge, Computer Laboratory, New Museums Site, Pembroke Street, Cambridge CB2 3QG. Telephone (0223) 334629, JANET: ap@uk.ac.cam.cl. Professor Gray's visit is supported by a grant under the LMS Scheme 2.

JOURNALS

pay only the cost of packing and shipping. Reply to Professor R. Mansfield, Darrera Sa Paret 58, Esporles, Mallorca, Spain. Telephone 34-71-610324.

Cambridge Mathematics

The Volume of Convex Bodies and Banach Space Geometry

G. PISIER

This book gives a self-contained presentation of a number of recent results which relate the volume of convex bodies in n -dimensional Euclidean space and the geometry of the corresponding finite-dimensional normed spaces.

£30.00 net Hard covers 0 521 36465 5 272 pp. 1989

Cambridge Tracts in Mathematics 94

Chaotic Evolution and Strange Attractors

D. RUELLE

This is the first book in a penetrating new series of science books. It provides an accessible and and leisurely account of systems that display a chaotic time evolution. Based on lectures given by one of the world's leading authorities on nonlinear dynamics, it avoids complex mathematics, yet provides an excellent understanding of the fundamentals.

£25.00 net Hard covers 0 521 36272 5. 107 pp. 1989

£8.95 net Paperback 0 521 36830 6

Lezioni Lincee

Now in paperback

An Introduction to Fourier Analysis

T. W. KÖRNER

'...an extraordinary and very attractive book...I would like to see it on the desk of every pure mathematician with an interest in classical analysis, and of every teacher of applied mathematics whose work involves analysis...This is how mathematics ideally should be presented, but too seldom is.'*SIAM Review*

£20.00 net Paperback 0 521 38991 7 608 pp. 1989

An Introduction to Harmonic Analysis on Semi-simple Lie Groups

V. S. VARADARAJAN

This introductory graduate text emphasises the development of the central themes of semi-simple lie groups in the context of special examples. The author, however, does not lose sight of the general flow and structure of the subject making this a highly readable account.

£40.00 net Hard covers 0 521 34156 6 328 pp. 1989

Cambridge Studies in Advanced Mathematics 16

For further information write to Susan Chadwick at the address below

Cambridge University Press

The Edinburgh Building, Cambridge, CB2 2RU, UK

Special Offer from Cambridge

Combinatorial Group Theory

DANIEL E. COHEN

This book shows the value of using topological methods in combinatorial group theory. The material is given in terms of the fundamental groupoid, giving results that are both stronger and simpler than the traditional ones.

£30.00 net Hard covers 0 521 34133 7 320 pp. 1989

£11.95 net Paperback 0 521 34936 2

LMS Members' special prices £22.50 Hc and £8.96 Pb

London Mathematical Society Student Texts 14

Introduction to Non-Commutative Noetherian Rings

K. GOODEARL and R. WARFIELD Jr

This accessible introduction to non-commutative Noetherian rings contains much explanatory discussion and many exercises throughout the text, making it an ideal first-year graduate text or a self-contained reference.

£30.00 net Hard covers 0 521 36086 2 328 pp. 1989

£11.95 net Paperback 0 521 36925 8

LMS Members' special prices £22.50 Hc and £8.96 Pb

London Mathematical Society Student Texts 16

Aspects of Quantum Field Theory in Curved Spacetime

STEPHEN A. FULLING

Since Hawking's discovery of black hole evaporation this topic has attracted great attention. This introduction provides mathematicians with a self-study text, enabling them to approach the subject from a congenial viewpoint.

£30.00 net Hard covers 0 521 34400 X 322 pp. 1989

£10.95 net Paperback 0 521 37768 4

LMS Members' special prices £22.50 Hc and £8.21 Pb

London Mathematical Society Student Texts 17

Braids and Coverings

VAGN LUNDSGAARD HANSEN

Based on a successful lecture course, this text assumes only a basic knowledge of algebraic topology. It considers classical material on the Artin braid groups, braids in the 2-sphere, braids as a tool in the study of knots and links.

£27.50 net Hard covers 0 521 38479 6 208 pp. 1989

£10.95 net Paperback 0 521 38757 4

LMS Members' special prices £20.63 Hc and £8.21 Pb

London Mathematical Society Student Texts 18

Cambridge University Press

The Edinburgh Building, Cambridge, CB2 2RU, UK

THE MATHEMATICS OF NONLINEAR SYSTEMS

University of Bath, 1 - 5 July 1991

FIRST ANNOUNCEMENT

As part of its Nonlinear Systems initiative, the United Kingdom Science and Engineering Research Council is sponsoring a major international conference to be held at the University of Bath. The aim is to review the importance of recent mathematical contributions to nonlinear science and to look forward to likely future developments.

A set of lectures given by celebrated mathematicians and scientists from outside the U.K. will form a skeleton around which the meeting will be planned. There will be approximately 45 other invited lectures by leading experts from the U.K. and around the world.

The following have accepted an invitation to give plenary lectures:

J.W. Cahn, C. Fefferman, C. Foias, M. Kruskal, P.D. Lax, A. Libchaber, J-L Lions, P-L Lions, A.J. Majda, J.N. Mather, J.W. Milnor, Ya.G Sinai, L. Tartar, S. Wolfram, V.E. Zakharov.

ORGANISERS

Professor J.F. Toland : School of Mathematical Sciences, University of Bath, Claverton Down, Bath BA2 7AY, United Kingdom. Telex: 449097 UOBATH G. Fax: 0225 826492. Telephone: 0225 826826 switchboard. Telephone: 0225 826188 direct line. Electronic mail jft@uk.ac.bath.maths.

Professor J.M. Ball : Department of Mathematics, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, United Kingdom. Fax: 031 449 5153. Telephone: 031 449 5111 switchboard. Telephone: 031 451 3227 direct line. Electronic mail MTHJMB1@uk.ac.hw.vaxb.

SURFACES, SUBMANIFOLDS AND THEIR APPLICATIONS

A workshop on Surfaces, Submanifolds and their Applications will be held at the University of Leeds from 14th to 18th May 1990. Among the main speakers will be: Bang-Yen Chen (Michigan) *Submanifolds of finite type*; James Eells (Warwick) *Minimal surfaces*; Hermann Karcher (Bonn) *Minimal hypersurfaces*; *isoparametric hypersurfaces*; Katsumi Nomizu (Brown) *Isoparametric surfaces in Minkowski space*; Ulrich Pinkall (Berlin) *Computer graphics, soliton equations and differential geometry*; Brian Smythe

(Notre Dame) *Geometric solution to Caratheodory's conjecture*; Leopold Verstraelen (Leuven) *Submanifolds of constant mean curvature* and Malcolm Bloor (Leeds) *A new method of obtaining blending surfaces*.

Enquiries from mathematicians who are interested in participating in this Workshop should be addressed to: Dr Alan West, Pure Mathematics Department, University of Leeds, Leeds LS2 9JT. Electronic mail: pmt6aw@uk.ac.leeds.ucs.cms1. Telephone: (0532) 335154.

HISTORY IN MATHEMATICS EDUCATION

The British Society for the History of Mathematics is organising a conference on the use of history in mathematics education from 7th to 9th April 1990 at the University of Leicester. The format is a mixture of talks, from teachers in this country and abroad who have developed historical perspectives in their mathematics teaching, and workshop sessions to consolidate and develop the

ideas further. The conference is not about teaching the history of mathematics as a school subject, but about using history in mathematics teaching.

For further information contact: Dr Steve Russ, HIMED 90, Department of Computer Science, University of Warwick, Coventry CV4 7AL. Telephone (0203) 523681.

PHYSICAL INTERPRETATIONS OF RELATIVITY THEORY

The British Society for the Philosophy of Science is sponsoring an international conference on Physical Interpretations of Relativity Theory, to review the development, status and potential of the various physical interpretations of the Relativistic Formal Structure. The conference will be held at Imperial College, London from Monday 3rd to

Saturday 8th September 1990.

For more information contact, Conference Co-ordinator: M.C. Duffy, School of Mechanical and Manufacturing Engineering, Sunderland Polytechnic, Chester Road, Sunderland SR1 3SD. Telephone (091) 515 2856.

THE UNIVERSITY OF BIRMINGHAM SCHOOL OF MATHEMATICS AND STATISTICS LECTURER IN APPLIED MATHEMATICS

Applicants should have a research background in applied mathematics preferably in one or more of the following areas: fluid mechanics, numerical analysis or industrial mathematical modelling. Experience in collaboration with industry would be advantageous.

Salary is on the scale £10,458 - £20,469 depending on qualifications and experience, plus superannuation.

For further particulars and an application form, write to the Director of Staffing Services, University of Birmingham, Edgbaston, Birmingham, B15 2TT, or telephone 021 414 6843 (24 hours ansaphone) quoting reference number 2109. Informal enquiries to Professor John Blake (Tel 021 414 6577, Fax 021 414 3907, e-mail Blakejr@vax1.bham.ac.uk).

The closing date for applications is 31 January 1990. The University of Birmingham is an equal opportunities employer.

ASTERISQUE

Published with the support of Centre National de la Recherche Scientifique.

Journal edited by Société Mathématique de France

1988 ISSUES

No 157 - 158 Colloque Paul Lévy sur les processus stochastiques (22-26 juin 1987, Ecole Polytechnique, Palaiseau)(372 pages, list: 255FF, S.M.F. member 180FF)

No 159 - 160 O. MATHIEU. Formules de caractères pour les algèbres de Kac-Moody générales (268 pages, list: 185FF, S.M.F. member: 130FF)

No 161 - 162 Séminaire BOURBAKI, volume 1987/88, exposés 686-699 (308 pages, list: 215FF, S.M.F. member: 150FF).

No 163 - 164 On the geometry of differentiable manifolds, Rome, juin 1986 (284 pages, list: 195FF, S.M.F. member: 135FF).

No 165 I. DOLGACHEV, D. ORTLAND. Point sets in projective spaces and theta functions (212 pages, list: 145FF, S.M.F. member: 100FF).

No 166 H. CLEMENS, J. KOLLAR, S. MORI. Higher dimensional complex geometry (144 pages, list: 100FF, S.M.F. member: 70FF).

No 167 A. GOLDMAN. Mouvement brownien à plusieurs paramètres: mesure de Hausdorff des trajectoires (106 pages, list: 75FF, S.M.F. member: 55FF).

No 168 Orbites unipotentes et représentations I. Groupes finis et algèbres de Hecke (218 pages, list: 150FF, S.M.F. member: 105FF).

1989 ISSUES

No 169 - 170 D.G. BABBITT, V.S. VARADARAJAN. Local moduli for meromorphic differential equations (220 pages, list: 160FF, S.M.F. member: 110FF).

No 171 - 172 Orbites unipotentes et représentations, II. Groupes p-adiques et réels. (338 pages, list: 245FF, S.M.F. member: 170FF).

No 173 - 174 Orbites unipotentes et représentations. III. Orbites et faisceaux pervers. (332 pages, list: 240FF, S.M.F. member: 170FF)

No 175 P. de la HARPE, A. VALETTE - La propriété (T) de Kazhdan pour les groupes localement compacts (avec un appendice de M. Burger). (158 pages, list: 115FF S.M.F. member: 80FF)

1990 SUBSCRIPTION PRICES (No181 à 192) List: 1100FF, S.M.F. member 660FF.

12 ISSUES A YEAR. Softcover.

DIFFUSION

S.M.F. Members:

Société Mathématique de France,
B.P. 126-05, 75226 Paris Cedex 05

France and Abroad (except U.S.A., Canada, Mexico):

Société Mathématique de France,
B.P. 126-05, 75226 Paris Cedex 05 or
Offilib: 48 rue Gay-Lussac, 75240 Paris Cedex 05

U.S.A., Canada, Mexico:

American Mathematical Society,
P.O. Box 6248, Providence, Rhode Island 02940.
U.S.A.



NATIONAL UNIVERSITY OF SINGAPORE

DEPARTMENT OF MATHEMATICS

Applications are invited for teaching appointments from candidates who are able to teach in one or more of the following areas:

Pure Mathematics
Applied Mathematics
Operational Research
Statistics

Candidates should possess a PhD degree in Mathematics or its equivalent.

Gross annual emoluments range as follows:

Lecturer S\$50,390 – 64,200
Senior Lecturer S\$58,680 – 100,310
Associate Professor S\$88,650 – 122,870
(STG£1.00 = S\$3.13 approximately)

The commencing salary will depend on the candidate's qualifications, experience and the level of appointment offered.

Leave and medical benefits will be provided. Depending on the type of contract offered, other benefits may include: provident fund benefits or an end-of-contract gratuity, a settling-in allowance of S\$1,000 or S\$2,000, subsidised housing at nominal rentals ranging from S\$100 to S\$216 p.m., education allowance for up to three children subject to a maximum of S\$10,000 per annum per child, passage assistance and baggage allowance for the transportation of personal effects to Singapore. Staff members may undertake consultation work, subject to the approval of the University, and retain consultation fees up to a maximum of 60% of their gross annual emoluments in a calendar year.

The Department of Mathematics is a department in the Faculty of Science. There are 8 faculties in the National University of Singapore with a current student enrolment of some 14,000. All departments are well-equipped with a wide range of facilities for teaching and research.

All academic staff have access to the following computer and telecommunication resources: an individual microcomputer (and IBM AT-compatible or Apple Macintosh); and IBM mainframe computer with 16 MIPS of computing power; and NEC SX supercomputer with 650 MFLOPS of computing power; departmental laser printers; a wide spectrum of mainframe and microcomputer software; voice-mail; BITNET to access academic institutions world-wide. In addition, a proposed campus network based on state-of-the-art optical fibre technology will be installed by 1990 to facilitate resource sharing and electronic communication for the academic community.

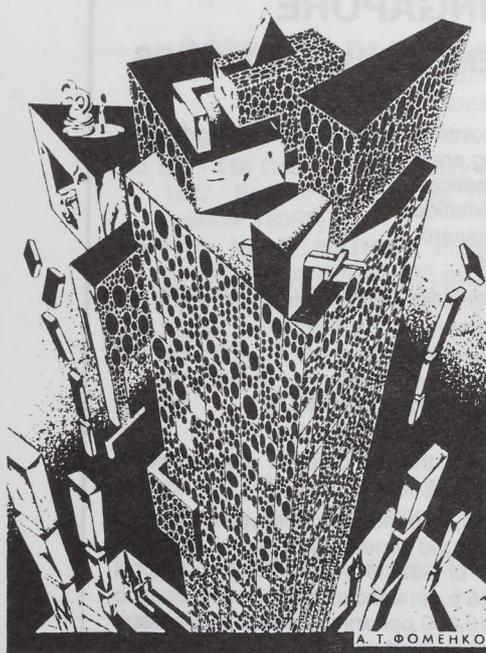
Application forms and further information on terms and conditions of service may be obtained from:

The Director
Personnel Department
National University of Singapore
10 Kent Ridge Crescent
Singapore 0511

NUS Overseas Office
Singapore High Commission in London
5 Chesham Street
London SW1, U.K.
Tel: (01) 235-4562

Enquiries may also be sent through BITNET to: **PERSDEPT @ NUSVM**, or through **Telefax: (65) 7783948**

Textbooks in Algebra and Number Theory



T. W. Hungerford, University of Washington, Seattle, WA, USA

Algebra

1st ed. 1980. 5th printing 1989. XXIII, 502 pp. (Graduate Texts in Mathematics, Vol. 73).
Hardcover £ 28.00 ISBN 3-540-90518-9

This complete, clearly written algebra text is geared towards the beginning graduate level. Emphasis is on the topics covered in a first-year course—sets, cardinal arithmetic, groups, rings, modules, fields, Galois theory, linear algebra, commutative algebra, categories, and functors. The format allows maximum flexibility in the choice, order, and degree of coverage of the topics. Numerous illustrative examples and exercises of varying degrees of difficulty are included.

Springer-Verlag

Berlin Heidelberg New York
London Paris Tokyo Hong Kong

8 Alexandra Rd., London SW19 7JZ, England

N. Koblitz, University of Washington, Seattle, WA, USA

A Course in Number Theory and Cryptography

1987. VIII, 208 pp. 5 figs. (Graduate Texts in Mathematics, Vol. 114). Hardcover £ 24.00
ISBN 3-540-96576-9

The purpose of this book is to introduce the reader to arithmetic topics, both ancient and modern, which have been at the center of interest in applications of number theory, particularly in cryptography. No background in algebra or number theory is assumed, and the book begins with a discussion of the basic number theory which is needed. The approach taken is algorithmic, emphasizing estimates of the efficiency of the techniques which arise from the theory. A special feature is the inclusion of recent application of the theory of elliptic curves. Extensive exercises have been included in all of the chapters.

J.-P. Serre, Paris, France

Algebraic Groups and Class Fields

Translation of the French Edition

1988. IX, 207 pp. (Graduate Texts in Mathematics, Vol. 117). Hardcover £ 24.00 ISBN 3-540-96648-X

Contents: Summary of the Main Results. – Algebraic Curves. – Maps From a Curve to a Commutative Group. – Singular Algebraic Curves. – Generalized Jacobians. – Class Field Theory. – Group Extension and Cohomology. – Bibliography. – Supplementary Bibliography. – Index.

S. Lang, Yale University, New Haven, CT, USA

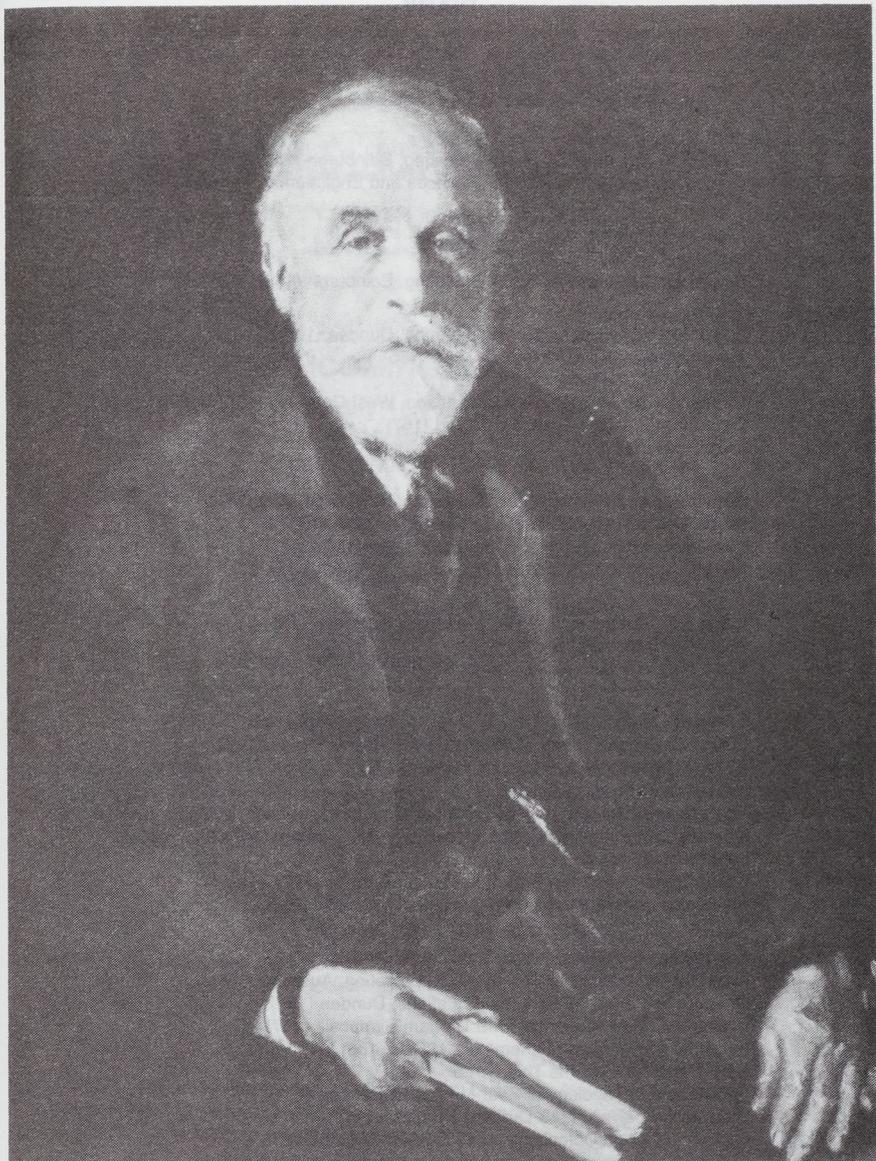
Algebraic Number Theory

1st ed. 1970. Corr. 2nd printing 1986. XIV, 354 pp. 7 figs. (Graduate Texts in Mathematics, Vol. 110).
Hardcover £ 28.00 ISBN 3-540-96375-8

This is a corrected reprint of Lang's well known textbook. It covers all of the basic material of classical algebraic and analytic number theory, giving the student the background necessary for the study of modern number theory. Part I introduces some of the basic ideas of the theory: number fields, ideal classes, ideles and adeles, and zeta functions. Part II covers Class Field Theory, and part III is devoted to analytic methods, including an exposition of Tate's thesis.

Springer





Sir William Davison Niven (1843-1917) was one of three distinguished mathematical brothers. He graduated from Aberdeen and went to Trinity College Cambridge, where he finished 3rd Wrangler in 1866 and became a fellow in 1867. After a time as professor at Woolwich working on gunnery and ballistics, he returned to Cambridge, and became a friend of Maxwell. He helped edit the second edition of Maxwell's *Electricity and Magnetism* after the author's death, and, inspired by his late friend, worked increasingly on spherical and ellipsoidal harmonics. He became an FRS in 1882, the year he took a chair at the Royal Naval College, Greenwich. He was the Society's 23rd President, from 1908-1910.

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.

1990

JANUARY

- 19 LMS Meeting, London
19 Edinburgh Mathematical Society Meeting, Edinburgh (165)
29-2 Feb Computing Methods in Applied Sciences and Engineering, France (167)

FEBRUARY

- 4-9 Chaos in Australia, Australia (167)
16 LMS Meeting, Bath
16 Edinburgh Mathematical Society Meeting, Edinburgh (165)

MARCH

- 9 Edinburgh Mathematical Society Meeting, Dundee (165)
13-16 Iranian Mathematics Conference, Iran (165)
16 LMS Meeting, London
18-24 Mathematische Gesellschaft Convention, West Germany (166)
26-27 Disorder in Physical Systems, Oxford (167)
26-30 Invited Lectures (160)

APRIL

- 1-14 Generators and Relations in Groups and Geometries, Italy (164)
2-6 British Mathematical Colloquium, East Anglia (166, 167)
3-4 Mathematics in a Changing Culture, Glasgow (166)
22-27 Analytic Functions, Poland (167)

MAY

- 4 Edinburgh Mathematical Society Meeting, Aberdeen (165)
18-19 2-day LMS Meeting, Sheffield
23-26 Computing and Information, Canada (166)

JUNE

- 2 Edinburgh Mathematical Society Meeting, St Andrews (165)
6-9 European Consortium for Mathematics in Industry, Finland (159)
11-14 XIV Rolf Nevanlinna Colloquium, Finland (162)
11-14 Hyperbolic Problems, Sweden (166)
12-15 Analysis and Optimization of Systems, France (161)
14-16 Mathematical Education Conference, Brunei Darussalam (167)
15 LMS Meeting, London
25-13 Jul Shape Optimization and Free Boundaries, Canada (167)
27-30 Algebraic Hyperstructures and Applications, Greece (162)

JULY

- 1-15 Adams Memorial Symposium, Manchester (163)
2-6 Australian Mathematical Society Annual Meeting, Australia (165)
3-6 Ordinary and Partial Differential Equations, Dundee (164)
5-15 Groups and Combinatorics, LMS Durham Symposia (167)
8-12 Industrial and Applied Mathematics, U.S.A. (166)
9-11 New Trends in Systems Theory, Italy (162)
9-20 Geometry and Topology of Four-Manifolds, Canada (162)
11-21 Stochastic Analysis, LMS Durham Symposia (167)
22-1 Aug Boolean Function Complexity, LMS Durham Symposia (167)
31-2 Aug Dynamics of Numerics and Numerics of Dynamics, Bristol (167)

AUGUST

- 21-29 International Congress of Mathematicians 1990, Japan (151) (165) (166)
21-29 Logic Conference, Japan (160)

SEPTEMBER

- 24-28 Structures in Mathematical Theories, Spain (166)

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 W1V 0NL, to arrive before the first day of the month prior to publication. Telephone 01-437 5377, fax 01-439 4629, E-mail lms@uk.ac.kcl.cc.oak.
