

THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 230

September 1995

FORTHCOMING SOCIETY MEETINGS

Friday-Saturday 20-21 October 1995,

Scientific Societies' Lecture Theatre

Stochastic Analysis

D. Bakry, E. Bolthausen, L. Gross,

J.F. LeGall, D. Nualart, E. Pardoux

Friday 17 November 1995, Burlington House

I. Ekeland, J.M. Ball

Friday-Saturday 16-17 February 1996, Bath University

Differential Equations

H. Brézis, E.B. Davies, E.H. Lieb,

P.H. Rabinowitz, C.A. Stuart, T. Weidl

LMS COUNCIL DIARY

The Council meeting on 16 June was largely taken up with finance. For example we debated how our registered charity status should affect our investment management. One side-effect of our conclusions is that we shall have to apply to the Privy Council for leave to change our Charter and Statutes. We recalled our decision two years ago, that at each future revision of a Statute, we would seize the opportunity to make it gender-neutral.

We also agreed prices for the Society's periodicals for the coming year. The bad news is a sharp rise in the cost of paper; we managed to cushion the prices to some extent against this, though we heard that the rise is likely to continue. The good news is that the number of subscribers to our new journals translated from the Russian, *Sbornik Mathematics* and *Izvestiya Mathematics*, is going up steadily.

We learned that the Society's fourteen boxwood models of quartic surfaces have been given an indemnity value of several thousand pounds. These models have been on loan to the Science Museum in South Kensington since 1876, and their indemnity value is probably the least significant thing about them.

We saw a draft of the pamphlet on careers for mathematicians, which we shall be distributing to schools and sixth-form colleges. It provoked a lively debate. For example, will schoolchildren relate to the fact that a senior executive of some well-known company took a mathematics degree? Should unemployment be mentioned? But all in all we thought it was excellent, and we authorised the printing of up to 30,000 copies of the colour version.

Wilfrid Hodges

EDITORIAL

We wish to remind members that we are pleased to receive articles from them for publication in the Newsletter. *Council Diary* gives information about Council activities and it is our policy to publish all responses from Council to requests for comment from public bodies. If you wish to support Council or express a contrary view, please let us know. We will consider contributions on any

topic of general interest to the mathematical community. Provocative and/or controversial articles will be welcomed! Heads of Departments are encouraged to send us information about appointments, promotions and long-term visitors for inclusion in *Departmental News*.

Susan Oakes
Alan Pears
Joint Editors

1995 LIST OF MEMBERS

The 1995 List of Members should accompany this Newsletter. My thanks to all members who returned their forms. As far as possible each individual member's entry contains precisely the information supplied by the member. Some alterations have, however, been necessary to achieve the consistent format agreed by Council, and others have been forced by space limitations. If any member finds an error

in their entry which is not attributable to these causes, or if there are any subsequent changes to the particulars (such as extra degrees gained, or change of address) please inform me, as soon as possible, either in writing, or by e-mail: lms@kcl.ac.uk.

Susan Oakes
Administrator

FERRAN SUNYER I BALAGUER PRIZE

Each year the Institute d'Estudis Catalans presents the Ferran Sunyer i Balaguer Prize. This international award recognizes an outstanding mathematical monograph presenting the latest developments in an active area of mathematics research. Ferran Sunyer i Balaguer (1912-1967) was a self-taught Catalan mathematician who, in spite of a serious physical disability, was very active in research in classical analysis and achieved international recognition. The competition for the prize is open to all mathematicians. Monographs submitted for the prize must be original, written in English, and at least 150 pages long. It must be in an area in

which the applicant has made important contributions.

The prize of 1,800,000 pesetas is provided by the Ferran Sunyer i Balaguer Foundation. The winning monograph will be published in Birkhäuser-Verlag's series *Progress in Mathematics*, subject to the usual regulations concerning copyright and author's rights. Monographs, preferably typeset in TeX, should be sent before 15 December 1995, to: Institut d'Estudis Catalans, Carme 47, 08001 Barcelona, Spain; e-mail: crm@crm.es. The name of the prize-winner will be announced in Barcelona in April 1996.

LONDON MATHEMATICAL SOCIETY

NOTICE OF GENERAL MEETING

There will be a General Meeting of the Society on Friday 20 October 1995 at 5.00 pm in the Scientific Societies' Lecture Theatre, New Burlington Place, London W1, 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 Council has, in the light of Statute 11, increased the annual subscription of Corporation and Institutional Members for 1995-96 to £470 from the 1994-95 level of £450. The new By-Law II,3 would record the new rate.

Text of the proposed By-Law II,3

The annual subscription to the Society of Corporation and Institutional Members for the 1995-96 session shall be £470, 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 £16.50 for each Representative in excess of one.

R.Y. Sharp
Council and General Secretary

LONDON MATHEMATICAL SOCIETY

FRIDAY-SATURDAY 20-21 OCTOBER 1995 MEETING ON STOCHASTIC ANALYSIS

Scientific Societies' Lecture Theatre, London

D. Bakry: *Lévy-Gromov's isoperimetric inequalities in infinite dimension*

J.F. LeGall: *Random trees and Lévy processes*

D. Nualart: *The Markov property and stochastic boundary value problems*

L. Gross: *Hall's transform via stochastic analysis*

E. Bolthausen: *Localization and delocalization phenomena for random walks*

E. Pardoux: *Averaging for backward SDEs and semilinear PDEs*

It is expected to have a dinner on the Friday evening.
Further details will appear in the October Newsletter.

MINI-CONFERENCE ON HOMOTOPY THEORY

The lectures will be held at the Mathematical Institute, Oxford, in the afternoon of 26 June, all day 27 June, and the morning of 28 June 1996. Accommodation can be provided, for a limited number of participants, in New College for the nights of 26 and 27 June. Further particulars will be available in the new year from Ioan James.

COLLINGWOOD MEMORIAL PRIZE

This prize was established by the London Mathematical Society in memory of Sir Edward Collingwood, and is awarded annually to a student of the University of Durham obtaining First Class Honours in mathematics and entering a course of postgraduate study. The 1995 prize is awarded to Mr. M.C. Ratter of Hild/Bede College who is intending to do research at the University of Glasgow.

BRITISH COMBINATORIAL CONFERENCE

The sixteenth British Combinatorial Conference will be held at Queen Mary and Westfield College, University of London, from 7 to 11 July 1997. More details will be given in a later Newsletter.

ALI FRÖHLICH'S 80th BIRTHDAY

A celebratory dinner and lectures will be held at Robinson College, Cambridge, on the weekend of 22 June 1996. The event will be supported by the London Mathematical Society. The three lectures will be given by C.J. Bushnell, M.J. Taylor and J. Thompson F.R.S.

MODELS AND GROUPS, LEEDS

There will be a one-day meeting on Models and Groups at the University of Leeds on Saturday 9 September 1995, partly sponsored by the London Mathematical Society. Talks start at 11.00am and end at 5.00pm. The speakers are D. Haskell, F-V. Kuhlmann, C.E. Praeger, M. Droste. Contact Dugald Macpherson (pmtndm@lucs-03.novell.leeds.ac.uk) for more details.

RESULT OF AN APPEAL

Mr A.H. Campbell, who appealed, in the September 1994 issue of the Newsletter, for help for Liu Gang, a mathematician imprisoned in China, has heard from Amnesty International that Liu Gang has been released "at the end of his sentence". Mr Campbell wishes to thank all who helped the appeal and feels sure it was worthwhile.

THOMAS V. GEDRICH

Dr Thomas V. Gedrich, who was elected a member of the London Mathematical Society on 21 November 1980, died after a road accident on 31 July 1995 at the age of 37.

Those interested in participating can obtain further details from M.J. Taylor at Department of Mathematics, UMIST, PO Box 88, Manchester M60 1QD; e-mail: martin.taylor@umist.ac.uk; fax: 0161 - 200-3669; telephone: 0161 -200- 3640.

LONDON MATHEMATICAL SOCIETY

Spitalfields Day
Friday 15 September 1995

Mathematics Institute, University of Warwick

Algebraic Geometry and Other Stories

Programme

- | | |
|---------------|--|
| 10:00 - 11:00 | Coffee |
| 11:00 - 12:00 | Dietmar Salamon (Warwick):
<i>Seiberg-Witten invariants and symplectic geometry</i> |
| 12:30 - 13:30 | Alexander A. Klyachko (Samara):
<i>Stable bundles and Hermitian operators</i> |
| 13:30 | Buffet lunch |
| 15:00 - 16:00 | Ziv Ran (Durham):
<i>Period vectors of Calabi-Yau manifolds
or: How to tell you're hearing a Calabi-Yau</i> |
| 16:00 - 16:30 | Tea |
| 16:30 - 17:30 | W. Fulton (Chicago):
<i>Degeneracy loci for the classical groups</i> |

Everyone is welcome to attend, but it is important that all participants give notice by contacting Elaine Greaves at the Warwick Mathematics Research Centre (e-mail: Elaine@maths.warwick.ac.uk).

The LMS Spitalfields Day is part of a one-week workshop "Curves, surfaces, 3-folds, ...", Monday 11 - Saturday 16 September 1995 which is the introductory activity of the EPSRC Warwick Symposium on Algebraic Geometry 1995-96. Updated information is available on the internet: FTP: [ftp.maths.warwick.ac.uk/pub/symposia](ftp://ftp.maths.warwick.ac.uk/pub/symposia); WWW: <http://www.maths.warwick.ac.uk/mrc/>

BRITISH WOMEN MATHEMATICIANS DAY 22 September 1995

This is a one-day meeting for the support and encouragement of women mathematicians in UK universities. The meeting will be held at the Mathematics Department, Imperial College, London on Friday 22 September 1995 from 11.00 am till 5.30 pm (with coffee from 10.30 am).

The lecture programme is as follows: Frances Kirwan "Witten's nonabelian localisation principle and intersection pairings on moduli spaces", Ruth Gregory "Cosmic strings and other weird things", Rebecca Hoyle "Patterns in natural systems", Sofia Lambropoulou "Generalized knots, braids and the Jones polynomial" and Susan Pitts "Non parametric estimation in insurance". There will also be a report by Marj Batchelor on the

European Women in Mathematics Meeting in Madrid, and a panel discussion, with Amanda Chetwynd, Anne-Christine Davies, Lesley Jones and Dusa McDuff on the panel.

Anyone is welcome to attend, and research students are particularly encouraged to do so. The meeting is supported by the London Mathematical Society and there will be some funding to assist with travel expenses of research students.

For further details and booking form, please contact Ruth Williams (rmw7@amtp.cam.ac.uk or at DAMTP, Silver Street, Cambridge CB3 9EW). Booking beforehand is necessary if you want the buffet lunch.

STAKING A CLAIM for Girls and Women in Science and Technology

The Fawcett Society and the Association for Science Education are organizing a Conference on Saturday 4 November 1995 at Westhill College, Birmingham, to monitor progress of women in science, engineering and technology. The keynote speaker will be Anthea Millett, Chief Executive, Teacher Training Agency. The conference will consider issues relating to

gender in science and technology education and will provide opportunities to present and discuss good practice that sustains girls' interest in and commitment to science and technology. Further information can be obtained from The Fawcett Society, 40-46 Harleyford Road, London SE11 5AY.

RETIREMENT OF IOAN JAMES

Ioan James is retiring from the Savilian Professorship of Geometry at Oxford at the end of September. He has been appointed to an Emeritus Professorship by the University and to an Emeritus Fellowship by New College. He has also been appointed to a Visiting Professorship at the University of

Paris. An international conference on Homotopy Theory in his honour was held at the Palazzo Feltrinelli, on Lake Garda, in June; a similar event took place earlier at Fukuoka University. Ioan and Rosemary James will be guests of honour at a Dinner in New College given by the Oxford mathematicians on 28 September.

UNIVERSITY OF CAMBRIDGE

Isaac Newton Institute for Mathematical Sciences

Applications are invited from candidates able to take up office by
1st October 1996 as

Director

of this international institute to succeed Sir Michael Atiyah, OM, PRS

The successful candidate will be a senior academic who has administrative experience and who works in some branch of the mathematical sciences.

The appointment will be subject to the statutes and ordinances of the University.

The present pensionable stipend for the Directorship is £38,993.

The post will be for five years with the possibility of reappointment.

Candidates for the Directorship should send ten copies of their application, marked "Confidential", together with the names of two referees, to the Secretary General of the Faculties, from whom further information regarding the Directorship is available at the General Board Office, The Old Schools, Trinity Lane, Cambridge CB2 1TT, so as to reach him no later than Monday 16th October 1995.

The University of Cambridge follows an equal opportunity policy and aims to achieve the highest quality in teaching and research.

ICTP TRIESTE Mathematics Activities 1996

15 April - 3 May 1996 School on Non-linear Functional Analysis and Applications to Differential Equations; Directors: A. Ambrosetti (Scuola Normale Superiore, Pisa, Italy), K.-C. Chang (Peking University, Beijing, P.R. China), I. Ekeland (Université de Paris IX, France); deadline for requesting participation: 30 September 1995.

12 - 30 August 1996 School on Algebraic Groups & Arithmetic Groups; Directors: M.S. Raghunathan (T.I.F.R., Bombay India), G. Harder (Universität Bonn, Germany); deadline for requesting participation: 15 January 1996.

9 - 27 September 1996 School on Numerical Simulation of Partial Differential Equations: Methods, Algo-

rithms, Applications; Directors: R. Duran (Universidad de Buenos Aires, Argentina), A. Quarteroni (Politecnico di Milano, Italy), A. Valli (Università di Trento, Italy); deadline for requesting participation: 15 February 1996.

In addition to ICTP support for the participation of researchers working in developing countries, further funds have generously been made available by the European Commission for the participation of young researchers working in the European Economic Area. Details are available upon request to: Sharon Laurenti, Mathematics Section, International Centre for Theoretical Physics, PO Box 586, 34100 Trieste, Italy; e-mail: laurenti@ictp.trieste.it.

MATHEMATICS RESEARCH CENTRE UNIVERSITY OF WARWICK

Programme 1995-6 WARWICK SYMPOSIUM ON ALGEBRAIC GEOMETRY

Organisers: Miles Reid and Nigel Hitchin

The symposium will take place from 1 September 1995 to 31 July 1996, and visitors are welcome at all times. The year will have several active periods slanted towards particular areas of research, and a number of related special events.

INTRODUCTORY WORKSHOP ON "CURVES, SURFACES, 3-FOLDS,..."
Monday 11th - Saturday 16th September 1995

WORKSHOP ON "TORIC GEOMETRY AND APPLICATIONS"
Monday 18th - Saturday 23rd September 1995

ACTIVE PERIOD: "3-FOLDS, CLASSIFICATION AND BIRATIONAL GEOMETRY"
September 1995 - January 1996

AGE ANNUAL SCIENTIFIC REVIEW
Friday 8th - Sunday 10th December 1995

CONFERENCE ON "3-FOLDS"
Monday 11th - Saturday 16th December 1995

ACTIVE PERIOD: "VECTOR BUNDLES AND MUTATIONS"
February - March 1996

ACTIVE PERIOD: "SYMPLECTIC GEOMETRY AND YANG-MILLS"
March - May 1996

CONFERENCE ON "GEOMETRY AND PHYSICS"
Monday 25th March - Tuesday 2nd April 1996

ACTIVE PERIOD: ALL TOPICS
June - July 1996

EUROCONFERENCE
Monday 15th - Saturday 20th July 1996

CONCLUDING WORKSHOP
Monday 22nd - Wednesday 31st July 1996

For updated information on each of the above events, participation details and accommodation forms please see:

FTP: [ftp.maths.warwick.ac.uk/pub/symposia](ftp://ftp.maths.warwick.ac.uk/pub/symposia)

WWW: <http://www.maths.warwick.ac.uk/mrc/>

or contact: Elaine Greaves at the Warwick Mathematics Research Centre
(e-mail: Elaine@maths.warwick.ac.uk).

MATHEMATICS IN VICTORIAN BRITAIN 16 - 17 September 1995

A weekend meeting on Mathematics in Victorian Britain will be held at Kellogg College, Oxford on 16-17 September 1995. The speakers will be Karen Hunger Parshall (Virginia), Ivor Grattan-Guinness, Tony Crilly and Adrian Rice (Middlesex), Keith Hannabuss and Raymond Flood (Oxford),

Eileen Magnello and Andy Warwick (London), and John Fauvel, Robin Wilson, June Barrow-Green and Helen Gardner (Open University). Further details may be obtained from Dr Raymond Flood, OUDCE, 1 Wellington Square, Oxford OX1 2JA (e-mail: rgf@vax.ox.ac.uk).

PATRICK PARKS MEMORIAL MEETING 18 September 1995

A meeting will be held on Monday, 18 September 1995, to commemorate the work of Professor Parks, whose untimely death occurred in February this year. The meeting will commence at 2 pm in Somerville College, Oxford University, and will consist of an afternoon lecture series followed by dinner in hall.

Invited speakers for the afternoon session include: Professor H. Rosenbrock FRS (UMIST) Professor E. Avedyan (Institute of Control, Moscow); Professor C. Harris (University of Southampton); Professor H. Tolle (University of Darmstadt, Germany); Professor A. Pritchard (University of Warwick); Professor K. Warwick (University of Reading); Professor B. White (Shrivenham).

The speakers have been selected so as to reflect the different fields of interest of Professor Parks, from Lyapunov stability theory to neural networks. A generous donation from the London Mathematical Society has allowed the meeting to take place without a fee. For administrative purposes, it would be of help if you could contact Mrs Pamela Bye at the Institute of Mathematics and its Applications, Catherine Richards House, 16 Nelson Street, Southend-on-Sea, Essex SS1 1EF, if you intend to be present. The evening dinner will commence at 7 pm and there is a charge of £25 per person. Please send a cheque payable to Somerville College to Mrs Bye by 8 September.

DIDEROT MATHEMATICAL FORUM

A cycle of conferences, organized by the European Mathematical Society and called "Diderot Mathematical Forum" will feature two conferences a year taking place simultaneously in three European cities exchanging information by telecommunication and addressing in their programmes three different aspects: fundamental mathematics, applications

of mathematics and their relation to society (e.g., ethical and epistemological dimensions). For 1996, the following two conferences are in the making: "Mathematics and Finance" (H. Föllmer) (London, Moscow, Zürich) and "Mathematics and Space" (J.L. Lions) (Amsterdam, München, Toulouse).

Topics in the Constructive Theory of Countable Markov Chains

G. FAYOLLE, V. A. MALYSHEV and
M. V. MENSHIKOV

The main point of the present book is to provide methods of analysing Markov chains based on Lyapunov functions. The authors provide not only a self-contained introduction to the theory but also details of how the required Lyapunov functions are constructed in various situations.

£27.95 net HB 0 521 46197 9 176 pp. 1995

Quasicrystals and Geometry

M. SENECHAL

The author brings together for the first time the many strands of contemporary research in quasicrystal geometry and weaves them into a coherent whole. The discovery in 1984 of crystals with 'forbidden' symmetry posed fascinating and challenging problems in many fields of mathematics.

£40.00 net HB 0 521 37259 3 302 pp. 1995

Absolutely Summing Operators

J. DIESTEL, H. JARCHOW and A. TONGE

This text provides the beginning graduate student with basic knowledge of real and functional analysis, with an account of p -summing and related operators. There are detailed expositions of the core results and highly non-trivial applications, for example to harmonic analysis, probability and measure theory and operator theory. This is the first time that the subject and its applications have been presented in such complete detail in book form.

£40.00 net HB 0 521 43168 9 490 pp. 1995
Cambridge Studies in Advanced Mathematics 43

Arithmetic of Diagonal Hypersurfaces over Finite Fields

F. Q. GOUVEA and N. YUI

The authors cover the arithmetic of diagonal hypersurfaces over finite fields, with special emphasis on the Tate conjecture and the Lichtenbaum–Milne formula for the central value of the L-function. It combines theoretical and numerical work, and includes tables of Picard numbers. Although this book is aimed at experts, the authors have included some background material to help non-specialists gain access to the results.

£19.95 net PB 0 521 49834 1 181 pp. 1995
Special price for LMS members £18.95

London Mathematical Society Lecture Note Series 209

Number Theory

Seminaire de theorie des nombres, 1992-3

Edited by SINNOU DAVID

This is the fourteenth annual volume arising from the Seminaire de Theorie des Nombres de Paris, with many contributions from some of the world's leading figures. The very latest research developments are covered and much of the work presented here will not be found elsewhere. Also included are surveys that will serve to guide the reader through the extensive published literature.

£24.95 net PB 0 521 55911 1 304 pp. 1995
Special price for LMS members £18.70

London Mathematical Society Lecture Note Series 215

The Logical Status of Diagrams

SUN-JOO SHIN

This book examines the status of diagrams in logic. It presents Venn diagrams as a formal system of representation with rules of transformation, thus demonstrating that valid proofs can be diagrammatic. The work challenges the prejudice against visualisation in logic and mathematics and provides a formal foundation for visual reasoning.

£24.95 net HB 0 521 46157 X 209 pp. 1995

ematics

Local Analysis for the Odd Order Theorem

H. BENDER and G. GLAUBERMAN

This book presents a new version of the local analysis section of the Feit–Thompson theorem. It includes a recent (1991) significant improvement by Feit and Thompson and a short revision by T. Peterfalvi of the separate final section of the second half of the proof.

£19.95 net PB 0 521 45716 5 186 pp. 1995
Special price for LMS members £14.95

London Mathematical Society Lecture Note Series 188

Introduction to the Modern Theory of Dynamical Systems

A. KATOK and B. HASSELBLATT

This book provides the first self-contained comprehensive exposition of the theory of dynamical systems as a core mathematical discipline closely intertwined with all main areas of mathematics. The authors introduce and rigorously develop the theory while providing researchers interested in applications with fundamental tools and paradigms.

£60.00 net HB 0 521 34187 6 822 pp. 1995

Encyclopedia of Mathematics and its Applications 54

Harmonic Approximation

S. J. GARDINER

The subject of harmonic approximation has recently matured into a coherent research area with extensive applications. This is the first book to give a systematic account of these developments. Throughout, inspiration is drawn from holomorphic results such as the well known theorems of Runge and Mergelyan. It is aimed at graduate students and researchers who have some knowledge of subharmonic functions, or an interest in holomorphic approximation.

£19.95 net PB 0 521 49799 X 148 pp. 1995
Special price for LMS members £14.95

London Mathematical Society Lecture Notes 221

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MATHEMATICS AND COMPUTING

a.m. turing



COMPUTERS IN NUMBER THEORY

Throughout the ages people have always carried out computations in number theory. For instance, the prime number theorem was conjectured by Legendre after extensive computations with prime numbers. Macmahon in 1918 verified Hardy and Ramanujan's formula for the partition number $p(200)$. All these computations were performed by human computers.

Today however one can use modern electronic computers to perform calculations once thought impossible. Before the advent of the modern computers D.H. Lehmer built a series of purpose built computing machines for problems in number theory. These were built from the 1920's onward; some made use of bicycle chains, some used photodetectors while others used movie film.

Luckily for the modern mathematician one does not need to be an expert at electronics or bicycle repairs to perform large computations. From the early days of computing in the late 1950's and early 1960's work was performed on using computers in number theory. The celebrated conjectures of Birch and Swinnerton-Dyer were formulated only after extensive computations with an electronic computer.

However, today the computing power that was only dreamt of a decade ago is now available on your desk top. This opens up a whole new area of computational number theory. Computers can now be used to compute integral bases, unit group generators and the class group structure of algebraic number fields. They are used to factor large integers and determine whether a large integer is a

prime number. In addition they can also be used to perform computations on elliptic curves or with almost any other object that occurs within number theory. The benefit is not only just for number theory. The help from computers is reciprocated with the application of number theoretic ideas to areas of computing such as cryptography and coding theory.

In this short review I will give an outline of some of the software now available to perform number theoretic computations. All of this software is readily available in mathematics departments throughout the country. All of the software I will discuss is available for use on UNIX workstations or on IBM compatible personal computers.

Firstly I shall consider the commercial packages such as MAPLE and MATHEMATICA. These are not particularly geared to number theory but can usually cope with some non-specialist problems such as working in finite fields or with p -adic numbers. Some more specialist functions can be added to these packages. For instance with MAPLE you can use the package APECS for working on elliptic curves. MAGMA, another commercial package developed at the University of Sydney and the replacement for its well-known predecessor CAYLEY, can perform much more specialist tasks. For instance MAGMA can compute integral bases, class groups and unit groups.

Given these days of tight budgets there are now a series of packages that are freely available by ftp. Four of the most popular are (including their home institutions) PARI (Bordeaux), SIMATH (Saarbrücken-Maths Department), KANT

(Berlin) and LiDIA (Saarbrücken - Computer Science Department). The content of each package reflects the research interests of the department where it was written. All except LiDIA have an interface to allow a user who is not a programming expert to utilise the package. For more expert users one can use these packages as a library of routines for your own FORTRAN, C or C++ programs.

KANT, with its interface program called KASH, is mainly geared towards computing in number fields. It can compute integral bases, bases of unit groups and class group structure of algebraic extensions of the rationals. In addition there are some routines to work with relative extensions. PARI, whose interface is called GP, is probably the most extensively used package. PARI can work in number fields much as KANT can, but in addition there are procedures to work with elliptic curves and p -adic numbers along with much more. For instance one can compute elliptic logarithms, a minimal model of an elliptic curve or the canonical height of some point on the curve. Many of the procedures in PARI are explained in the book by H. Cohen, "A Course In Computational Number Theory". PARI cannot, however, compute generators for the Mordell-Weil group. This, however, can be done using the package SIMATH.

Although KANT, PARI and SIMATH come with nice interfaces you cannot make full use of the power of such packages unless you use them as a library of routines for your own programs. However, when used in this way these

packages become tricky to use. They are written in C and hence programming in them can be fraught with problems for the average mathematician. This is mainly due to having to worry about pointers, malloc'ing and free'ing and other such computer science gobbledegook.

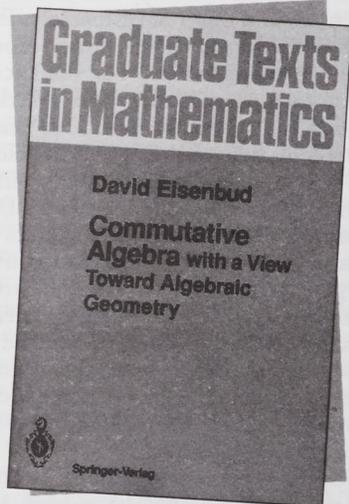
The newest package LiDIA does not have this shortcoming as it is written for use in C++ programs. This means one need not worry too much about pointers and other such matters. In addition a program looks much more like written mathematics. For instance in C a routine to multiply two matrices, A and B , and put the result in matrix P may look like: multiply(A,B,P); However in C++ using LiDIA you would just write: $P=A*B$; At the moment LiDIA has routines for working with lattices in real space, large integers, matrices containing large integers and an elliptic curve factoring algorithm. In future releases it should contain routines for elliptic curves and number fields. In addition an interface program for use by non-expert programmers will be included, much like PARI's interface, GP.

Of course there are many other computer programs that have been written for various tasks within number theory. I have attempted to review the main ones currently available. I hope I have encouraged some readers to go away and perform some computations in number theory.

N. Smart
University of Wales
College of Cardiff
Nigel.Smart@cm.cf.ac.uk

This occasional column is for the discussion of topics on the boundary between mathematics and computer science, thus covering both applications of mathematics in computer science and uses of computers in mathematics. Relevant material such as opinions, notices about Maths & CS meetings and reviews of research, teaching and support software is solicited. Contributions should be sent to the editors of the column: w.hodges@qmw.ac.uk (Wilfrid Hodges, Queen Mary & Westfield College) dfh@maths.warwick.ac.uk (Derek Holt, University of Warwick).

Commutative Algebra and Algebraic Geometry



D. Eisenbud

Commutative Algebra

with a View Toward Algebraic Geometry

1995. XVI, 785 pages. 90 figures

(Graduate Texts in Mathematics, Vol. 150).

Hardcover £ 55.50 ISBN 3-540-94268-8

Softcover £ 25.50 ISBN 3-540-94269-6

The author presents a comprehensive view of commutative algebra from basics.

One novel feature is a chapter devoted to a quick but thorough treatment of Gröbner basis theory and the constructive methods in commutative algebra and algebraic geometry that flow from it. Applications of the theory and even suggestions for computer algebra projects are included.

D. Cox, J. Little, D. O'Shea

Ideals, Varieties, and Algorithms

An Introduction to

Computational Algebraic Geometry
and Commutative Algebra

1st ed. 1992. Corr. 3rd printing 1995.

XI, 513 pages. 83 figures

(Undergraduate Texts in Mathematics).

Hardcover £ 29.50 ISBN 3-540-97847-X

Prices are subject to change without notice.
In EU countries the local VAT is effective.

"... I consider the book to be a wonderful text... The exposition is very clear, there are many helpful pictures, and there are a great many instructive exercises, some quite challenging... offers the heart and soul of modern commutative algebra and algebraic geometry."
Moss Sweedler, The American Mathematical Monthly



Springer

CANADIAN MATHEMATICAL SOCIETY 50th Anniversary Meeting

The Canadian Mathematical Society was founded at a meeting in Montreal in June 1945, and in June of this year a 5-day conference was held at the University of Toronto to celebrate its 50th birthday. Out of a total membership of around 1500 about 250 attended an event which attested to the vitality of contemporary Canadian mathematics. There was a fine series of plenary lectures by distinguished Canadian mathematicians and there were specialist sessions in four fields in which Canadians are particularly prominent: algebraic topology, general relativity, stochastic models, algebraic geometry and singularities. Many of the plenary speakers were Canadians who have successful careers in the United States. I will mention just two - Cathleen Synge Moravetz, the current President of the AMS, whose father (J.L. Synge) was at the University of Toronto, and L. Nirenberg, who was one of four participants who had also attended the founding meeting (Coxeter was another).

To mark the occasion the Society has published two volumes entitled

"Canadian Mathematical Society 1945-1995" containing interesting articles on the history of and outlook for mathematics in Canada. Here is an intriguing footnote from a thought-provoking article by Borwein and Davidson on the future of mathematics in Canada. They say that in 1990 Canadians published 73 mathematical research papers per million of population, while the corresponding figure for Britain is 36, for the USA 47, for Holland 47 and for France 41.

The Canadian Mathematical Society is wholeheartedly embracing information technology. It has put very substantial resources into developing an electronic information service called CAMEL, which can be reached by anonymous ftp at [camel.cecm.sfu.ca](ftp://camel.cecm.sfu.ca) or on WWW at <http://camel.cecm.sfu.ca>, and is going ahead fast with plans for electronic publishing.

Several societies were invited to send representatives to the anniversary meeting. I had the honour of representing the London Mathematical Society.

N.J. Young
Lancaster University

GREGYNOG WORKSHOP ON "COMPUTATIONAL TECHNIQUES IN SPECTRAL THEORY AND RELATED TOPICS"

A workshop on "Computational techniques in spectral theory and related topics" is to be held during the week 14-19 July 1996. The venue will be Gregynog Hall, which is a conference centre owned by the University of Wales and situated in the mid-Wales countryside, near Newtown. Financial support for the meeting will be provided by the EPSRC.

We invite applications from research workers with relevant interests to participate in the workshop and to offer a short talk if they so wish. Part of the cost

of accommodation at Gregynog will be covered. The number of places is limited, so that applications should be made as soon as possible, and not later than 1 December 1995. Please give a brief summary of your research interests and present position and write to Dr. B.M. Brown at Cardiff; e-mail: spectral@cm.cf.ac.uk; Dr B.M. Brown, University of Wales, Department of Computer Science, University of Wales, Cardiff, PO Box 916, Cardiff CF2 3XF.

JOBS FILE IN THE LMS ELECTRONIC ARCHIVE

The London Mathematical Society is now offering, as a service to its members and to the UK mathematical community, a world wide web page containing a list of currently available positions in Mathematics.

The aim is to provide, in a single place, a list which contains summary details of all mathematical posts available at any given time. It is not intended to supplant other methods of advertising by universities and departments and reference will always be given to other sources where full information can be obtained.

We hope very much that members can

arrange to make use of this facility since we believe that the list will be of greatest value if it is comprehensive. Anyone who wishes to advertise a position is asked to send details to Dr D. Holt, Mathematics Institute, University of Warwick, preferably by e-mail to the address dfh@warwick.ac.uk. It would be most helpful if the information could be provided, as far as is possible in the form displayed in the fictional illustration below. (The archive contains a 'blank' which can be downloaded.) The advertisement will be deleted on or shortly after the closing date for applications.

Broad field:	Pure Mathematics
Duration:	Two years
Position:	Lecturer
Institution:	Mathematics Department, Univ. of Notown
Starting date:	1. 1. 96 (or soon as possible thereafter)
Area(s) preferred:	Fawlty Logic
Contact person(s):	Professor M.A. Head (m.a.head@notown.ac.uk)
Application deadline:	31.8.95
Other comments:	Knowledge of Maple advantageous
Full details:	Personnel Office, University of Notown, Notown NN1 0PC
Telephone:	xxxx yyy zzzz
E-mail:	per.off@notown.ac.uk
WWW	http://www.notown.ac.uk/~per.off/mathsposts

JOURNAL BACKLOG 1995

	No. of Issues	No. of Pages	Backlog	Estimate (months)
Math. Proc. Camb.	6	1200	250	15 - 20
Edin. Math. Society	3	530	200	16 - 20
Glasg. Math. Journ.	3	384	150	16 - 20
LMS Bulletin	6	624	200	16 - 18
Journal	6	1248	800	15 - 24
Proceedings	6	1440	250	15 - 24
Mathematika	2	440	200	18 - 27
Oxford Q J M	4	512	310	18
R S Edin. Proc. A.	6	1344	820	14 - 18

**GOLDSMITHS' COLLEGE
UNIVERSITY OF LONDON
DEPARTMENT OF MATHEMATICAL SCIENCES**

LECTURESHIP IN PURE MATHEMATICS

Applications are invited for this post available from 1 January 1996. Candidates with research interests in any area of pure mathematics will be considered. Those with expertise in analysis or discrete mathematics are particularly welcome.

Salary will be on the Lecturer A scale £17,288 - £21,982 per annum inclusive of London Weighting Allowance.

Informal enquiries can be made to: Professor B.G. Quinn (e-mail: maa01bgq@gold.ac.uk) or Dr C.H. Chu (e-mail: maa01chc@gold.ac.uk; tel: 0171-919-7866). For further information write to: Personnel Department, Goldsmiths' College, New Cross, London SE14 6NW, or phone 0171-919-7999 (24 hour answerphone) quoting Ref:5/125A.

Closing date: **25 September 1995**

**COMPUTATIONAL CONFORMAL GEOMETRY CONFERENCE
4 - 8 September 1995**

A Computational Conformal Geometry conference will be held at the University of Southampton from 4 - 8 September 1995. The topics covered are centred around Riemann surface theory and include Fuchsian, Kleinian and NEC groups, real and complex algebraic curves, Teichmüller and moduli spaces, uniformisation, eigenvalue problems related to Riemann surface theory, and dessins d'enfants, with an emphasis on computational and algorithmic methods.

This conference is one of a series organised by mathematicians involved in the European Union Human Capital and Mobility Network on Computational Conformal Geometry. It is being supported by the London Mathematical Society. If you are interested in attending this conference, or would like further details, please contact: David Singerman, Faculty of Mathematical Studies, The University of Southampton, Southampton SO17 1BJ; tel: 01703-593671; e-mail: ds@maths.soton.ac.uk

FIELDS INSTITUTE DISTINGUISHED LECTURE SERIES

The following lectures will be given by Andrew Wiles (Princeton University) at The Fields Institute, Toronto, Ontario, Canada: 20th October at 4.30 pm on "Fermat's Last Theorem"; 23rd October

at 11.00 am on "Modular Forms and Elliptic Curves". Further information can be obtained by e-mail: valeriot@fields.uwaterloo.ca.

University of Canterbury, Christchurch, New Zealand Department of Mathematics and Statistics

Chair of Applied Mathematics

The University invites applications for a Chair in Applied Mathematics. The successful candidate will possess a strong continuing record of internationally recognized research in any branch of Applied Mathematics. A proven record of academic leadership demonstrated by encouraging excellence in research, teaching and postgraduate supervision will be required.

Current research areas include computational mathematics, dynamical systems, fluid dynamics, biomathematics and relativity. The department has strong traditional links with the School of Engineering and the successful candidate would normally be expected to foster and encourage these ties.

Applications close on **30 November 1995**.

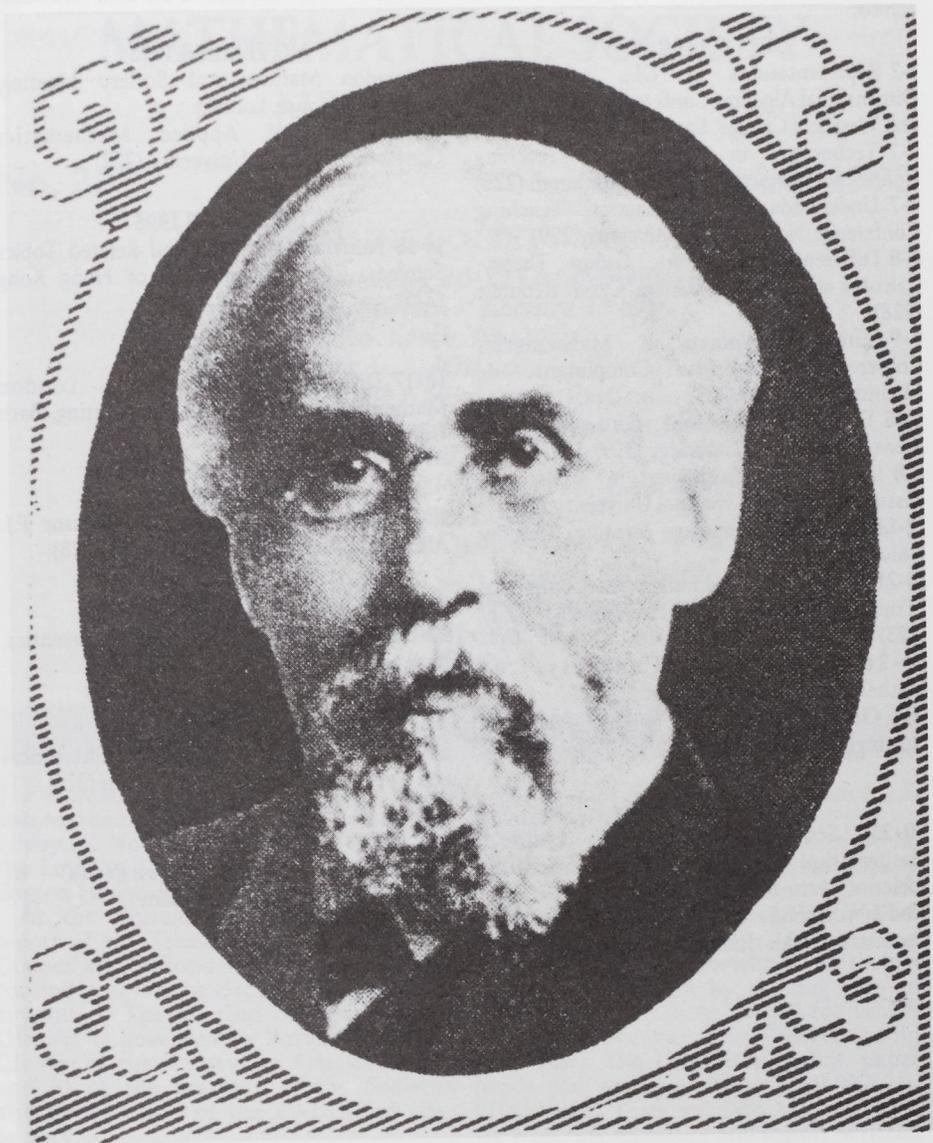
Preliminary enquiries of an academic nature, regarding this position, may be made to Dr P.F. Renaud, Head, Department of Mathematics and Statistics: Tel: (03) 3642696 or Fax: (03) 3642587. Further particulars and Conditions of Appointment may be obtained from the undersigned. Applications, quoting Position No. MT65, must be addressed to: Mr A.W. Hayward, Registrar, University of Canterbury, Private Bag 4800, Christchurch, New Zealand.

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

CONFERENCE GRANTS - A NEW APPROACH

The Royal Society's Travel Grants Scheme has been renamed the Conference Grants Scheme and is run by the Research Support Section under the leadership of the Biological Secretary. The Scheme provides grants for visits overseas where participation at a conference is the main purpose and the conference is on any scientific or technological discipline within The Royal Society's remit. Grants are made as a contribution to international air fares and subsistence for up to seven days.

The procedure for assessing applications has been completely redesigned to take the maximum advantage of computer technology, improve the quality of the peer review process and simplify administration, thus increasing its efficiency. New application forms and guidance notes for applicants will be available shortly. All enquiries should be addressed to Mrs Sandra Goodall at The Royal Society (telephone: 0171 839 5561 ext. 273).



H.A. LORENTZ
Honorary Member 1898

DIARY

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

SEPTEMBER 1995

- 1-2 Representations of GL_n and Finite Dimensional Algebras Conference, Queen Mary and Westfield College, London (229)
4-7 Technology in Mathematics Teaching Conference, Napier University, Edinburgh (225)
4-7 Undergraduate Mathematics Teaching Conference, Nottingham University (229)
4-8 Differential Equations, Group Theory, Calculus of Variations Course, Czech Republic (228)
4-9 European Women in Mathematics Conference, Universidad Complutense de Madrid, Spain (219) (223)
4-15 Dynamical Systems Euro-conference, Newton Institute, Cambridge (229)
6-8 Information Processing in Cells and Tissues Workshop, Liverpool University (225)
12-13 10th British Topology Meeting, Glasgow University (228)
13-21 Mathematics and Philosophy Conference "Truth in Mathematics", Mussomeli, Sicily (223)
18-26 Pan-African Congress of Mathematicians, Ifram, Maroc (224)
25 One-day Function Theory Meeting, Nottingham University (224)

OCTOBER 1995

- 20-21 Stochastic Analysis, London Mathematical Society Meeting, Scientific Societies' Lecture Theatre, London
23-27 Workshop on Arithmetic Algebraic Geometry, Fields Institute, Toronto, Canada (229)

NOVEMBER 1995

- 17 London Mathematical Society Meeting, Burlington House, London
19-22 Pure and Applied Mathematics Conference, Bahrain University (222)

DECEMBER 1995

- 14-18 Functional Analysis and Related Topics Seminar, Chinese University of Hong Kong (225)

FEBRUARY 1996

- 16-17 Differential Equations, London Mathematical Society Two-Day Meeting, Bath University

APRIL 1996

- 15-19 LMS Invited Lectures - Professor F.J. Almgren, University College London (228)

JULY 1996

- 22-26 2nd European Congress of Mathematics, Budapest, Hungary

AUGUST 1996

- 25-31 International Congress of Theoretical and Applied Mechanics, Kyoto, Japan (226)

AUGUST 1998

- 18-28 International Congress of Mathematicians, Berlin, Germany

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 0171-437 5377, fax 0171-439 4629, e-mail lms@kcl.ac.uk. The London Mathematical Society is registered with the Charity Commissioners.